3-1-1972

1972-1974 Wright State University Undergraduate Course Catalog

Wright State University

Wright State University Bulletin
undergraduate catalog

Correspondence should be addressed to the offices indicated below and mailed to:

Wright State University
Dayton, Ohio 45431

Academic Programs
The Dean of the appropriate division

Academic Records and Reports
The Registrar

Admissions
The Director of Admissions

Financial Aid and Scholarships
The Director of Financial Aid

Financial Information
The Business Manager

General University Policy
The President

Housing
The Director of Residence

Publications
The Director of University Publications

Publicity Information
The Director of Communications

Student Activities
The Dean of Students

Tel: 513/426-6650
Visitors are welcome at the university. Buildings are normally open Monday through Thursday from 8:30 a.m. to 11:00 p.m., on Friday from 8:30 a.m. to 5:00 p.m., on Saturday from 8:30 a.m. to noon, and on Sunday from 1:00 p.m. to 4:00 p.m.

The university reserves the right to make changes in policy, regulations, and fees subsequent to publication of this Bulletin.

Wright State University Bulletin

Undergraduate Catalog 1972-1974

Wright State University Bulletin
Vol. III, No. 3,
March, 1972
Second-class postage paid at Dayton, Ohio 45401.
Published by Wright State University, Dayton, Ohio 45431, eight times a year in January, February, March, April, May, June, August, and November.

Board of Trustees

	Term Expires
Robert S. Oelman, *Chairman*	June 30, 1976
Frederick A. White, *Secretary and Treasurer*	
Harry K. Crowl	June 30, 1974
Dave Hall	June 30, 1975
Harry P. Jeffrey	June 30, 1977
John E. Keto, *Vice-Chairman*	June 30, 1979
George W. Lucas	June 30, 1978
Richard O. Michael	June 30, 1972
David L. Rike	June 30, 1973
Ray F. Ross	June 30, 1980

Executive Officers

Brage Golding	President
Andrew P. Spiegel	Vice-President *and* Provost
Frederick A. White	Vice-President *and* Treasurer
O. Edward Pollock	Vice-President *and* Director of Student Services
Robert J. Kegerreis	Vice-President *and* Director of Administration

Academic Deans

John V. Murray	College of Business and Administration
F. Norwood Marquis	College of Education
Eugene B. Cantelupe	College of Liberal Arts
Robert T. Conley	College of Science and Engineering
Warren H. Abraham	Division of Continuing Education
Arthur C. MacKinney	Division of Graduate Studies
Craig D. Willis	University Division

Contents

University Calendar
1972-1974

1972-73

Fall Quarter	*September 25 - December 16, 1972*
September 25	Monday. Classes begin.
October 23	Monday. Holiday.
November 22	Wednesday. Classes end for Thanksgiving weekend at 4:00 p.m.
December 9	Saturday. Classes end at 5:00 p.m.
December 11-16	Monday - Saturday. Final examinations.
Winter Quarter	*January 4 - March 20, 1973*
January 4	Thursday. Classes begin.
February 19	Monday. Holiday. (Presidents Day)
March 14	Wednesday. Classes end at 4:00 p.m.
March 14-20	Wednesday — Tuesday. Final examinations.
Spring Quarter	*March 26 - June 10, 1973*
March 26	Monday. Classes begin.
May 28	Monday. Holiday. (Memorial Day)
June 4	Monday. Classes end at 4:00 p.m.
June 4-9	Monday - Saturday. Final examinations.
June 10	Sunday. Commencement.
Summer Quarter	*June 18 - August 29, 1973*
June 18	Monday. A and C Terms begin.
July 4	Wednesday. Holiday. (Independence Day)
July 25	Wednesday. A Term ends.
July 26	Thursday. B Term begins.
August 29	Wednesday. B and C Terms end.

1973-74

Fall Quarter	*September 24 - December 15, 1973*
September 24	Monday. Classes begin.
October 22	Monday. Holiday.
November 21	Wednesday. Classes end for Thanksgiving weekend at 4:00 p.m.
December 8	Saturday. Classes end at 5:00 p.m.
December 10-15	Monday - Saturday. Final examinations.
Winter Quarter	*January 3 - March 20, 1974*
January 3	Thursday. Classes begin.
February 18	Monday. Holiday. (Presidents Day)
March 13	Wednesday. Classes end at 10:00 p.m.
March 14-20	Thursday - Wednesday. Final examinations.
Spring Quarter	*March 25 - June 9, 1974*
March 25	Monday. Classes begin.
May 27	Monday. Holiday. (Memorial Day)
June 1	Saturday. Classes end at 5:00 p.m.
June 3-8	Monday - Saturday. Final examinations.
June 9	Sunday. Commencement.
Summer Quarter	*June 17 - August 27, 1974*
June 17	Monday. A and C Terms begin.
July 4	Thursday. Holiday. (Independence Day)
July 23	Tuesday. A Term ends.
July 24	Wednesday. B Term begins.
August 27	Tuesday. B and C Terms end.

The University

A Brief History

Wright State University is one of a small group of unique institutions of higher learning. Opened in 1964 as a campus of the state university system operated jointly by Miami University and the Ohio State University, it is unfettered by tradition. It has the advantage of utilizing current thinking and new knowledge with respect to organization, curriculum planning, and content of the teaching and research programs. The university — and its students — enjoy a singular opportunity for striking out in new directions.

Until 1964, Miami University and the Ohio State University had been holding late afternoon and night classes in Dayton. Increasing interest in both programs occasioned a progression of moves as borrowed facilities became inadequate, and the need for a more permanent solution was clear. Recognition of this need on the part of the community gave impetus to a combined university building fund which was launched in 1962. The campaign raised $3 million for the new campus and an equal amount for the University of Dayton. The Ohio State University and Miami University were invited to operate the new venture and two years later, the Dayton Campus opened its one building to over 3,200 students. In 1965, the Wright State Campus was created, under the direction of the Boards of Trustees of the parent institutions; by 1967, independent status for Wright State

University as a state assisted institution was legally established.

The following year marked several important "firsts" in the history of the university. At its first commencement in June of 1968, 315 baccalaureate and 31 master's degrees were awarded. Full accreditation of all undergraduate programs and two master's programs was transferred to the new university, in addition to provisional accreditation of other master's programs. In October of that year, the university inaugurated its first president, Dr. Brage Golding, who was selected unanimously by a faculty-administration committee. Dr. Golding came to Wright State as president-elect with a broad background of academic, administrative, and industrial experience.

Wright State's growth has bordered upon the unbelievable. Currently, enrollment on the main campus, branch campus, and academic center approaches 12,000; over 60 undergraduate and more than 20 master's programs are offered. The physical plant now includes four multipurpose buildings, a University Center, a fine arts studio facility, and a residence hall for 150 men and 150 women completed in 1970. The record to date is impressive, but it is only the beginning. With community and state support, the elements which have characterized the brief history of the university will continue to shape its future: growth, change, and challenge.

The Campus

Because of its location — a 618-acre site northeast of Dayton and within the Fairborn city limits — Wright State enjoys both the stimulation of a metropolitan community and the atmosphere of a rural setting. The gently rolling, wooded terrain has been used to advantage in the master plan for campus development. This plan, as well as the acquisition of the campus and the first all-purpose building, Allyn Hall, was made possible by the initial $3 million investment by the community.

The first building was named in honor of Stanley C. Allyn, co-chairman of the combined university building fund campaign, whose vision and support contributed in such large measure to the success of the new campus. Allyn Hall contains classrooms as well as many of the administrative, faculty, and student affairs facilities. Originally a self-contained university, Allyn Hall has undergone many changes in use as new buildings have been constructed.

Oelman Hall, named after Robert S. Oelman, co-chairman

of the building fund campaign and first chairman of the Wright State University Board of Trustees, was the second of the campus structures. In addition to classrooms, teaching and research laboratories, administrative and departmental offices, the building includes a 500-seat amphitheater designed for multipurpose use, a 250-seat lecture hall, and a number of special scientific facilities.

The largest building on campus is Millett Hall. It was named for John D. Millett, President of Miami University at the time of the establishment of the campus and now Chancellor of the Ohio Board of Regents. Millett Hall contains an interim library with adequate study and reading areas for some 750 students and open stacks for close to 200,000 volumes. The building also includes classrooms, lecture and seminar rooms, as well as divisional and faculty offices.

More complete facilities for studies in the sciences and engineering are provided in Fawcett Hall, one of the newest buildings on campus and named after Novice G. Fawcett, president of The Ohio State University at the inception of the campaign for the creation of the new campus. Within this building are thirty-two laboratories, twenty-seven storage and preparation rooms, twenty classrooms, sixty-three faculty and divisional offices, a large lecture hall, and other educational areas including an observation platform for astronomical studies.

These buildings, located on the western edge of the campus, form Founders' Quadrangle, the first of several planned academic courtyards. Construction of the next group of buildings — a Creative Arts Center with facilities for fine arts, music and theater, a Learning Center-Library, and a Physical Education Center with a natatorium — are underway with completion scheduled for the fall of 1972.

The University Center provides lounges, meeting rooms, a pool room, information and counter shop, bookstore, and a student activity area which houses offices for student organizations and publications. A cafeteria and rathskeller offer a variety of food. Pending completion of the Physical Education Building, the Intramural and Intercollegiate Athletics offices are located in the center.

The first residence hall, opened in the fall of 1970, accommodates over 300 students in two wings. Dining and recreational facilities are available in the University Center immediately adjacent to the dormitories.

Purposes of the University

The chief purposes of Wright State University [as adopted

by the Wright State University Board of Trustees] shall be the achievement of excellence in teaching, the achievement of substantial contributions to human knowledge, the achievement of major service to the larger community, and the maintenance of a free and cosmopolitan environment for the work toward such achievements.

Teaching

The teaching program of the university shall reflect valid knowledge from the past, and also explore knowledge at its frontier, where validity is not yet firmly established.

The university shall pursue that ideal relationship between teacher and student, where each learns from the other; where the student is led outward to his highest level of motivation and understanding; and, where the teacher is bound by his own growing knowledge to a continuous revision of the content of instruction.

The student shall be exposed to a variety of academic disciplines and the exploration of areas of knowledge other than those lying within his professional studies. The university shall make opportunities available for the student to live and work with others and to know cultures other than his own.

The university shall make intensive efforts to assist each student, with proper reference to his gifts or lack thereof, to achieve his maximum self-fulfillment, his greatest value as a member of society, and the highest quality of life of which he is capable. The university shall accept the obligation to assist and motivate each student in his field of career study to the end that he shall be able to compete with the graduates of any university in graduate study or in the earning of a livelihood in a changing and complex economy.

The university shall hold the years of study in residence to be only a beginning of the learning process, and shall seek to maintain in its professional community and its student body a consciousness of learning as a continuing process through life. To this end the university shall place no less emphasis upon excellence in adult education than upon excellence in the teaching program for degree candidates.

The university shall pursue the foremost knowledge of teaching methodology and be a place of study and experimentation in this field. The university will innovate to the end that more be learned at lower cost in wealth and human effort; but shall seek always to maintain the small-university environment, wherein the gifts of outstanding teachers can be known and cherished by the students in a context of personal relationships.

Research

The university shall actively foster the advancement of learning in each of its academic disciplines and among them. The university shall encourage the search for truth in all its fields, being no less concerned with new discovery in the arts and the humanities than in the sciences.

The university shall perform research at its various levels, and will on occasion perform research as a service to the larger community. No test of practicability shall be imposed upon scholarship, however, and the search for basic truth for its own sake shall not be subordinated to research for the near-range purposes of the larger community.

The university shall foster interdisciplinary research. While a degree of academic specialization shall be deemed necessary and proper, special effort will be made to encourage the scholar distinguished in more than one discipline and encourage joint achievement among the disciplines.

The university shall encourage and reward clarity of mind, creativity and objectivity of outlook, love of truth and discovery, and persistence to completion of undertakings. Openness of mind shall be honored. The university shall provide incentives for its students and professional members to explore new paths, as well as established methodologies, in their pursuit of knowledge. To this end study and advancement of research methodology shall be encouraged in the various disciplines.

Service

The university, as a public and predominantly urban university, shall be especially cognizant of the American university's tradition of public service.

Within a framework of excellence in teaching and research, the university shall be responsive to the needs of the Miami Valley, the State of Ohio, and the region. To the extent feasible and compatible with commitments in teaching and basic research, the university shall lend its human resources, its recorded learning, its techniques, its equipment, and its physical resources to the solution of human problems in the larger community.

In recognition of its founding by and among the people of a metropolitan area, the university shall make special efforts to lend substantial service in the field of urban life, problems, and potentialities.

The university shall seek distinction as a center of knowledge and culture in its region of service. Intellectual activity and visual and performing arts shall be presented to the

public, who shall be made welcome on this campus, and be recognized at all times as the owners of this university.

The University Environment

In the interest of achievement in the fields of teaching, research, and service, the university shall support the freedom of each individual within the university to inquire into any subject, learn the truth about it, and express conclusions of such inquiry without interference. Such freedom shall be limited only by consideration of the equally important rights of others.

As befits a public university established in a metropolitan area during the latter half of the twentieth century, this university shall actively seek a cosmopolitan membership in its faculty, staff, and student body. It shall draw to itself and benefit from the participation of persons of varied race, culture, experience, and national background. Never shall the university cause any person to suffer disadvantage because of race, color, religion, national origin, ancestry, or sex.

In keeping with its cosmopolitan character, the university shall aggressively maintain its identity as a general university and review its programs continuously, in order to guarantee that no discipline or field of specialization shall unduly dominate its total endeavor.

The university recognizes that its purpose and its desired environment, as hereinbefore described, are attainable only insofar as the people of the university aspire to them and actively seek them. To this end the university shall inculcate among all its members a sense of honor, professional pride, and mutual good faith.

[*The following amendment was passed by Board of Trustees action on June 17, 1970.*]

As a university we reaffirm our dedication to the historical traditions of universities and especially to the tradition of academic freedom. We intend in our role as members of the university and as individual citizens to resist the politicization of the university by right, left, or middle political groups or by any governmental group or official. The strength of the university lies in its nonpartisan educational, scholarly, and service contributions to its constituencies. The university has a positive obligation to foster communication, dialogue, and good citizenship, and its resources should be used to promote these ends. The members of the university — faculty, staff, and students — should be actively encouraged to participate as individual citizens in the processes of democratic government. As a university we endorse these principles.

Accreditation and Memberships

Wright State University is accredited by the North Central Association of Colleges and Secondary Schools. In addition, programs in the Division of Education have been accredited by the State of Ohio Department of Education. Wright State is also a member of the Assembly of the American Association of Collegiate Schools of Business (for studies in Business Administration), the American Association of Colleges for Teacher Education, the Midwest Conference on Graduate Study and Research, the National University Extension Association, the Ohio College Association, the Association of Urban Universities, the American Association of State Colleges and Universities, the American Council on Education, the American Association of Colleges, and the National Association of Schools of Music.

The Dayton-Miami Valley Consortium

Wright State University with eleven other area institutions of higher education is a member of the Dayton-Miami Valley Consortium. The consortium was established to promote community service and interinstitutional cooperation in order to achieve the educational advancement, research development, and administrative efficiency of the members.

In order to carry out these purposes, the consortium holds conferences of representatives of the teaching and research faculty and staff, library and administrative staffs of the member institutions, serves as a clearinghouse for the exchange of information, and promotes projects of educational research and experimentation. Cooperative programs presently exist or are planned in teaching, research, publishing, educational evaluation, college finance and administration, and other areas.

International Study Programs

The university offers the opportunity for interested students to participate in the "year abroad" program coordinated by the American Association of State Colleges and Universities. Under this program Wright State students can spend a minimum of one quarter and a maximum of one academic year pursuing their normal academic program in an international setting.

The International Study Center in Mexico is one of the

first in the network of centers which Wright State, in cooperation with AASCU, will ultimately establish around the world, offering a valuable international experience to students at AASCU member institutions. The Mexico center is affiliated with the University of the Americas, housed on a new 164-acre campus on the outskirts of Puebla. With a population of 600,000, Puebla is the fourth largest city in Mexico and is just over an hour's drive from Mexico City. The university is nondenominational and coeducational with a strong liberal arts curriculum and a bilingual faculty. It is affiliated with the Southern Association of Colleges and Schools. Over forty nationalities are represented in its student body.

The undergraduate academic program at the Mexico International Study Center is flexible enough to allow for varying interests of students. It provides general education offerings as well as opportunities to extend one's major or area of specialization in fields in which the University of the Americas has special strengths: humanities, social sciences, and fine arts. Both classroom experiences and the opportunity to conduct learning laboratories in the field are included in the program. Classes are conducted in English and foreign language proficiency is not required.

Information on fees, room, board, and registration may be obtained by contacting the international education adviser at the university.

Academic Organization

Wright State University offers instruction leading toward undergraduate degrees in business administration, education, the arts, sciences, and engineering through the Colleges of Business and Administration, Education, Liberal Arts, and Science and Engineering.

Each entering student working toward a degree is registered in the University Division until the conclusion of his freshman status and the declaration of a major.

Late afternoon, evening, and summer programs, as well as off-campus educational and special programs, are organized through the Division of Continuing Education and include undergraduate courses in the regular academic fields as well as graduate courses in selected fields. These graduate programs function as a part of the Division of Graduate Studies.

The University Division

It is the function of the University Division to coordinate all aspects of the beginning student's admission, orientation,

advisement, registration, adjustment, and counseling. Academic advisers discuss with each entering student his educational and vocational goals, results of the ACT tests, and individualized schedules of courses. Help in planning course schedules includes advice on the extent of the course load for the first quarter's work (many freshmen prefer to attempt less than the average fifteen-hour credit load for the initial quarter), selection of courses to fulfill the General Education requirements, selection of other courses, both for the student who has decided on his major and for the undecided student who wishes to explore the curriculum, and the amount of part-time work to which the student should restrict himself as well as any particular questions the student might wish to raise. Although many students will transfer to a degree-granting division after the completion of the freshman year (thirty-five credit hours), students who have not yet chosen a major may remain in the University Division another year.

The University Division provides a base for activities, group projects, and individualized counseling through which students may become an integral part of the university community.

Additional assistance is provided to students through the Special Services Program. Services provided to students may be in the form of free tutorial assistance through the Supplemental Instruction Program (SIP). Students in need of directed study and reading improvement may receive such assistance through the Study Skills and Reading Improvement courses.

High school students desiring a college experience may participate in the Wright Start Program which is held on campus for six weeks during the summer. Courses are taught by college faculty in English, science, and human relations.

All of the above services are provided at no cost to the student.

The College of Business and Administration

The College of Business and Administration has as its primary objective the development of qualified business professionals. This objective is met by insuring a knowledge of basic business functions; by providing the foundation for continuing self-development; by educating students to be aware of the businessman's responsibilities in the political, social, and economic order of society; and by increasing the student's capacity for quick, flexible adjustment to the rapidly changing conditions of the business world.

The College of Business and Administration offers a broad curriculum leading to a Bachelor of Science degree with majors in accountancy, business economics, finance, man-

agement, marketing, prelaw, quantitative business analysis, and office administration.

Graduate study is available to qualified students through a program which leads to the Master of Business Administration degree (M.B.A.). The program has been designed for persons holding baccalaureate degrees either in business administration or in other areas. Persons who are employed full time may complete a program on a part-time basis by taking courses offered in the evenings.

A second graduate program is offered leading to a Master of Science degree in social and applied economics. This is an innovative degree program in economics which stresses the practical application of social science theory. The program is designed primarily for the full-time graduate student and contains an internship which integrates experience with a multidisciplinary instructional base.

The College of Education

Wright State University recognizes teacher education and education of professionals in areas of human development as two of its primary functions. The College of Education is responsible for designing and administering programs for the preparation of teachers and specialized school personnel, for contributing to educational research, and for providing service to the schools of the area.

Teachers for the public schools are prepared through four-year curricula leading to the Bachelor of Science in Education degree, and a teaching certificate. All major teaching fields are available except physical education, home economics education, and industrial arts education. Students in these fields may take general education courses at Wright State University before transferring to another institution. Graduate courses leading to a master's degree are available for the preparation of various specialized personnel for public schools.

Another major area of responsibility of the college is the designing and administering of programs for the education of professionals in rehabilitation and related helping professions, contributions to human development research, and the provision of service to the rehabilitation agencies and facilities of the area.

The College of Education meets the certification standards of the Ohio State Board of Education and is a member of the American Association of Colleges for Teacher Education.

The College of Liberal Arts

The College of Liberal Arts has as its primary purpose provision for a well balanced liberal education which will

help the student attain the capacities: (1) to think creatively and to communicate his thoughts effectively; (2) to evaluate wisely and judiciously the several value systems which compete for his loyalty; (3) to achieve a critical understanding of the intellectual heritage of Western and non-Western cultures; and (4) to develop the discipline and resources that will permit him to continue his own education.

The college seeks, through a flexible curriculum with reasonable opportunities for election of courses, to develop a broad cultural background as a foundation for later professional study and work in a changing world. On graduation, the student should be qualified to pursue his special interest effectively, to appreciate the intellectual, aesthetic, and ethical values of life, and to act creditably in the society of which he becomes a part. Encouragement is given, especially in the junior and senior years, to definite preparation for a chosen career.

In summary, "the aim of liberal education . . . is the enlargement of mental capacity that can come through the process of acquiring, ordering, and reflecting upon . . . information. With this widening of intellectual horizons comes the ability to see things in proportion as they really are, that is to say, the attainment of a degree of wisdom."[1]

"A liberal education is not a thing of precise definition like an isosceles triangle, nor is it a fixed list of courses . . . It is rather a human quality and a personal achievement, which can be attained in a variety of ways."[2]

The College of Science and Engineering

The College of Science and Engineering provides instruction for lower and upper division students in the sciences and certain engineering fields as well as service courses for all areas of the university.

Curricula are offered in biological sciences (including medical technology), chemistry, computer science, engineering, geology, mathematics, physics, and psychology. Programs leading to the Bachelor of Science degree are available in each of these fields of study; programs for the Bachelor of Arts degree are available in the Departments of Biological Sciences, Chemistry, Geology, Mathematics, and Psychology. In addition, interdisciplinary baccalaureate programs in computer science and engineering physics are offered jointly by the Departments of Engineering, Mathematics, and Physics. Students interested in certain professional programs normally can take one of the science curricula or a modified program which will be acceptable for

[1]Gordon N. Ray, Secretary of the Guggenheim Foundation, "Is Liberal Education Still Needed?", 1962.

[2]George P. Schmidt, *The Liberal Arts College*, 1957.

graduation or for transfer elsewhere to the desired professional program.

Work leading to a Master of Science degree is offered in biological sciences, chemistry, engineering, geology, mathematics, and physics. The Master of Science in Teaching degree with area specializations in earth science and in physics may be earned through programs offered by the Departments of Geology and Physics respectively. These two new programs are designed primarily for secondary school teachers.

The Division of Continuing Education

The Division of Continuing Education has as a primary function the planning, coordination, and guidance of all programs for non-degree-seeking students in the university. It is responsible for all such students enrolled at Wright State whether or not for credit, full-time or part-time, day or evening.

Other responsibilities of the division include: (1) Coordination of the programming and counseling of late afternoon and evening students. The late afternoon and evening courses are a continuation of the daytime program. Courses from the freshman through the graduate level are scheduled. The flexible program permits a student to register as a part-time student, to combine registration with daytime study, or to register for a full program at night if daytime registration is not possible. The extent of the registration depends upon the amount of time that can be devoted to study. When a student is employed full time, a maximum registration of six hours is recommended. Adults who wish to complete work toward a degree, to pursue further study for self-enrichment, or to qualify for certification will find both beginning and advanced courses in science, engineering, mathematics, humanities, social sciences, education, and business administration. These courses may be taken for credit or may be audited. The graduate student will find graduate courses in education, business administration, engineering, and several areas of the sciences and liberal arts.

(2) Coordination of the summer program of the university. Courses of lower division, upper division, and graduate levels are scheduled in the summer quarter. The summer quarter is divided into two terms, each of 5½ weeks in length. Courses are scheduled for the full quarter or for either of the terms to permit flexible programming. Transient students, Wright State students seeking to accelerate their programs, teachers working for professional advancement, and others will find a variety of courses.

(3) Responsibility for short courses and other programs

of this nature. Short courses and workshops of varying length which may or may not carry academic credit are developed and scheduled for the summer quarter and other times of the year. These courses are developed to meet special needs.

(4) Scheduling of noncredit courses. Courses which do not carry academic credit but which are of university level are developed and scheduled by the division. These courses are for those who are not concerned with academic credit and a degree but who wish to advance their knowledge through structured courses. Certain courses are offered either for credit or non-credit. A student who has registered for non-credit may not change to a registration for credit after the beginning of classes.

(5) Coordination of the programming and counseling for all off-campus instructional programs.

THE PIQUA ACADEMIC CENTER

The Piqua Academic Center has a program of late afternoon and evening courses primarily at the lower division level. Courses at the advanced and graduate levels are scheduled to meet the needs of the area. A student may register for a part-time or a full-time program of courses. Academic counseling is provided by resident staff members and by representatives of the academic divisions of the university.

THE WESTERN OHIO BRANCH CAMPUS

The Western Ohio Branch Campus in Celina has a program of daytime and evening courses primarily at the lower division level; courses at the advanced and graduate levels are scheduled to meet the needs of the area. A student may register for a part-time or a full-time program of courses. Academic counseling is provided by resident staff members of the branch campus.

The Division of Graduate Studies

The Division of Graduate Studies is organized as one of the seven major academic divisions of Wright State University. Presently, the division offers master's degree programs in business administration, economics, education, history, biological sciences, chemistry, earth science, engineering, geology, library science, mathematics, and physics.

In addition to the courses offered on the Wright State campus, graduate courses are made available to part-time students through the Piqua Academic Center and the Western Ohio Branch Campus in Celina. Some departments offer late afternoon, evening, and Saturday morning classes on the Wright State campus, and most departments offer extensive graduate programs in the summer quarter.

Library Resources Center

The Library Resources Center is an instrument of education and research, and as such plays an important part in the learning experience of the student and the teaching and research of the faculty. It has a significant role in the student's university education whether it is used for regular course work, independent study, or personal enjoyment. To utilize the facilities, members of the center staff are available to give service and instruction to students and faculty.

The facilities of the center occupy the first two floors of Millett Hall. In an atmosphere conducive to study and research, seating for 720 persons is provided among the open book stacks. The rapidly growing collection of books, periodicals, and non-book materials totals more than 200,000 items. In addition to the large number of books being added to the collection, 3,600 serials are received regularly. The library is also a depository for U.S. Government documents and publications of the State of Ohio.

Over 1,000,000 volumes are available to the students and faculty through the cooperative agreement with the eleven other area libraries in the Dayton-Miami Valley Consortium. The library also participates in and maintains the *Union List of Serials in the Libraries in the Miami Valley*, a published list of the journal and serial holdings of some 10,000 titles in 40 libraries in the Miami Valley. Use of the facilities and resources of the libraries outside of the Wright State community are arranged through the Interlibrary Loan Librarian or an information consultant.

Areas in the center are available for viewing films, filmstrips, microfilms, and slides, and listening to record albums and audio tapes. The ever-growing media collection is easily accessible and its use is encouraged by its availability.

A large collection of resources materials has been assembled for the use of students planning classroom demonstrations or doing student teaching. In addition, there is a school textbook collection of over 5,000 volumes and an excellent children's literature collection.

An instructional media laboratory of mechanical, instructional, and audio-visual aids is available for students and faculty who may wish to learn to use effectively instructional equipment and media. A collection of programmed material can be used on an independent study basis by those students who wish to develop background for future courses or a breadth and depth in areas of personal interest.

Support Service provides service to faculty and students

in developing and utilizing media. All standard audio-visual equipment, including closed circuit television, is available for classroom and other campus uses.

Information pamphlets are available for all areas described above, giving more detailed information regarding the uses and services of the Library Resources Center.

Campus Life

Students at Wright State University are encouraged to participate in social and cultural activities on campus and in the student government. Many student groups are in the initial stages of development, providing unique, creative opportunities for each participating student.

Student Government

The student government affords a framework within which the student body may contribute substantially to the development of university policy in the areas of student conduct, finance, academic affairs, services, and activities. The Student Senate is the chief legislative agency of the student body. Its programs are devised and implemented by a number of committees in which all students are invited to participate. A Student Body President represents the student body formally and informally at all levels of student concern, on the campus and in the community. In addition, participation of students on a wide variety of university committees encourages close communication among the faculty, students, and administration and results in positive influences upon the program of the institution.

Student Publications

The Guardian, the campus newspaper, is published weekly, covering campus news, student opinions, announcements, and special features. *Nexus*, the campus literary magazine, appears periodically, offering selected poetry and prose of students and other members of the academic community. *Cambiar* is the university yearbook, a 200-page photographic journal of the year on campus.

Cultural Activities

Throughout the year, guest lecturers and artists are brought to the campus to present a broad variety of programs. In addition, the Department of Music and the Department of Speech and Theatre sponsor frequent performances in music and drama. A university band, chorus, and orchestra have also been organized.

Campus Clubs

Affiliated student organizations number more than fifty on the Wright State campus. Many clubs and organizations include faculty and staff members as well as students. Among these groups are departmental clubs in various academic areas, social, honorary, and professional fraternities and sororities, political clubs, religious organizations, and special-interest groups. Students interested in participating in existing organizations, or in forming new organizations, may contact the Office of the Dean of Students in Allyn Hall.

Intercollegiate Athletics

Wright State will begin its fifth season of intercollegiate athletics during the 1972-73 school year. Teams compete on the varsity level in baseball, basketball, and soccer. Competition includes teams from Ohio, Indiana, Kentucky, and Michigan.

All home games are played on campus; the 1972-73 school year is the first in which the new athletic facilities will be used.

Any full-time undergraduate male student in good academic standing is welcome to try out for any of the athletic teams. Full-time undergraduate women students, who are in good academic standing, may try out for the gymnastics team or the cheerleading squad. Information concerning these activities may be obtained by contacting the Athletic Department.

Intramural Activities

A number of intramural sports activities are open to Wright State students. Equipment for archery, basketball, golf, shuffleboard, softball, table tennis, volleyball, and weight lifting may be borrowed from the Intramural Sports Office on the lower level of the University Center. An intramural activities board in that area lists sports and recreation schedules.

The University Center

The University Center provides services as well as facilities for the entire university community. Complete dining facilities include a cafeteria, a rathskeller, and private dining rooms which are available to groups on request. Offices for student government, student publications, intramural sports, and intercollegiate athletics are located in the center. Additional facilities include a bookstore, a pool room, a student activities area, lounges, and meeting rooms. The University Center Board, also located in the center, is re-

sponsible for scheduling a wide variety of programs. Activities such as seminars, club meetings, dances, exhibits, and workshops provide an opportunity for members of the campus community to get to know and understand one another through informal association outside the classroom.

Food Service

Complete dining facilities are available in the University Center. Short order grill service and tables which accommodate about 300 people are provided in Allyn Hall.

Living on Campus

The first residence hall at Wright State, which opened at the beginning of the 1970 fall quarter, accommodates 156 men in one wing and 156 women in another. The University Center, directly adjacent to the residence hall, provides dining and recreational facilities. The cost is approximately $420.00 per quarter for room and meals. Students seeking residence hall accommodations may contact the Office of the Dean of Students.

University Bookstore

The W.S.U. Bookstore, on the lower level of the University Center, stocks required books and supplies in support of the academic program. A broad selection of paperback books, including best sellers and study guides, is available for related reading. School supplies, knit sport shirts, greeting cards, records, and gift items are also available. On request, the bookstore will order any book not stocked.

The bookstore is owned and operated by the university. Any income in excess of operating expenses is used to assist in the financing of the University Center and thus benefits the student body.

Assistance to the Physically Handicapped

From its inception, Wright State University has attempted to extend the opportunities of higher education to the physically handicapped as well as to the able-bodied. In 1967, the Ohio Bureau of Vocational Rehabilitation cited Wright State as the foremost institution in the state in facilities for handicapped students. The present enrollment of physically handicapped students is more than 100. Student handicaps range from quadriplegia and cerebral palsy to partial or complete blindness, epilepsy, and muteness.

Mobility throughout the campus is provided for students in wheelchairs, in leg braces, or on crutches. The buildings are entered by ramps which blend inconspicuously with the campus decor. Each of the buildings contains an elevator,

providing easy access to every floor. The classroom buildings are connected by air-conditioned tunnels, which provide comfortable passage from one class to another in inclement weather. In a special parking area, raised concrete platforms are provided between parking spaces to eliminate the problem of lifting wheelchairs over a curb.

The faculty, staff, and students of the university, as well as members of the community, cooperate in providing special academic assistance to handicapped students. These individuals serve in the following capacities: *Readers* verbally administer tests to the blind and tape textbooks to provide an auditory library for the sightless. *Writers* assist students whose arms or hands are incapacitated. *Tutors* provide a supplement to classroom instruction for those who encounter academic difficulty. *Tapers* tape class lectures for handicapped students in the event that the student must be absent from class for an inordinate length of time. Additional services are available to physically handicapped students in registration, transportation, housing, and placement. Further information may be obtained from the Office of the Dean of Students.

Health Service

A health clinic in the basement of Allyn Hall serves the students, faculty, and staff of the university. Registered nurses are on duty Monday through Thursday between 8:30 a.m. and 10:00 p.m. and on Friday from 8:30 a.m. to 5:00 p.m. Physicians are also on duty part time. In the event of an emergency, a local rescue squad is called for transportation to the hospital of the patient's choice. The facilities of nine area hospitals are available.

Counseling Services

To help each student benefit from his university career and develop his potentialities, counseling services are provided for a wide range of concerns — educational, vocational, personal, and social. The ultimate responsibility for requesting counseling, however, is that of the individual student.

With the assistance of counselors, the student may discuss and explore freely, in privacy and strict confidence, any concern that may be interfering with his academic success, personal goals, or future objectives. Both individual and group counseling are available in accordance with student needs.

To facilitate the student's self-exploration and decision making, the office also provides testing facilities as well as a library of current occupational information.

All students are welcome and encouraged to visit or use

the facilities and services in 135 Oelman Hall. There is no charge for any of the services. If at all possible, a counselor will see a student at the time counseling is requested. If not, a counseling appointment will be scheduled at the earliest possible date. The Counseling Services staff feels that it is important to talk with a student at the time the student feels he needs assistance. Counseling Services may also furnish counseling or consultation to student groups, as well as faculty and staff of the university.

University testing services, incorporated within Counseling Services, coordinates special testing required by the university, its colleges, or departments. Examples are the Admission Test for Graduate Study in Business, the American College Test, the Graduate Record Examination, and the Miller Analogies Test. Information concerning these and other required tests may be obtained from Counseling Services.

Placement Office

The Placement Office assists seniors, graduate students, and alumni in their investigations of and preparation for full-time career employment. Assistance consists of employment counseling, providing information regarding employment opportunities, referring credentials to prospective employers, and serving as a repository for student/alumni placement files. Each year representatives of schools, industry, business, and governmental agencies visit this office searching for candidates to fill their current and projected vacancies. Only students and alumni registered with the Placement Office have the opportunity to schedule on-campus interviews with these recruiters.

Registrants receive employment information through direct mailings, campus bulletin boards, faculty, the campus newspaper, and by regular visits to the Placement Office.

Students should become familiar with the placement operation during their sophomore year and register for the free service at the completion of their junior year.

Student Conduct

Wright State University believes that its students are adults and attempts to treat them accordingly. Consistent with this belief, the university has established a minimum number of regulations governing student conduct. It is the responsibility of each student to become informed of these regulations, described in the *Student Handbook*.

Academic Procedures

Admission Procedure for Undergraduate Studies

The student seeking admission for either graduate or undergraduate study should obtain the application forms and related materials, by letter or in person, from the Office of Admissions, Wright State University, Dayton, Ohio 45431. Regulations for determining Ohio residency appear later in this chapter.

A student must be officially accepted for admission to the Division of Graduate Studies before he can be permitted to register for graduate credit, whether he intends to be a degree student, a nondegree student, or a transient student. Detailed information concerning graduate study may be found in the *Wright State University Bulletin Graduate Catalog.*

Degree-Seeking Student

To apply for admission, the degree-seeking student or matriculant must present full credentials for admission and pay a matriculation fee of twenty-five dollars by check or money order. He may register full or part time.

All entering freshmen are required to take the achievement test (ACT) of the American College Testing Service, either before or during their first term on the campus. This is not used as an admission test, but as helpful information for the student and the university. Test centers for the ACT

have been established throughout Ohio. Information regarding times for testing should be obtained from high school counselors.

THE OHIO STUDENT

To be admitted as a matriculant to Wright State, the Ohio student must have graduated from high school. A transcript of the high school record and an application for admission must be filed with the Office of Admissions, Wright State University, Dayton, Ohio 45431. A high school student should apply for admission during, but not before, the first semester of his senior year.

THE OUT-OF-STATE STUDENT

Matriculants from other states must meet the foregoing requirements for admission, and must present evidence indicating better than average ability to do college work.

THE TRANSFER STUDENT

The applicant who has been registered for one or more courses in another college is considered a transfer student. He must present a transcript from each college in which he has been registered, regardless of whether credit has been granted or whether he desires to receive credit upon admission. Processing of applications for transfer will not be completed until a transcript has been received from the institution or institutions previously attended.

A transfer student who is on probation or does not have a cumulative C average on all studies attempted will be considered for admission on probation. A student who has been suspended for academic reasons from other institutions will normally not be considered for enrollment until one calendar year has intervened. If a student feels that special circumstances warrant it, he may appeal for a reduction of the one-year intermission from his studies. The Committee on Admissions will consider the admission of the suspended student, who will enter on probation if admitted.

Transfer credit will not be granted for course work with a grade of D or lower.

Courses taken ten years or more prior to admission will be subject to validation by the department responsible for the course. Transfer credits for matriculants will be evaluated by the end of the first quarter of a student's registration. Prior to receipt of this evaluation, it is the student's responsibility to see that he does not duplicate a course for which he may have transferable credit and to check that he has the necessary prerequisites for any course in which he registers.

Credits earned through correspondence study will be subject to the same regulations as other transfer credit.

THE CERTIFICATION CANDIDATE

A college graduate who wishes to become certified as a teacher must matriculate, filing full credentials for admission and evaluation and paying the matriculation fee.

The Nondegree Student

A student who wishes to take courses but does not plan to be a degree or certification candidate is a nonmatriculant. To be admitted the nonmatriculant student must pay a five-dollar application fee and file with the Director of Admissions a letter or transcript of record indicating good standing in the last school attended. He may register only as a part-time student, taking fewer than twelve hours of course credit in any quarter. Credits for such courses will be officially recorded and may be transferred. No more than thirty quarter hours of credit earned as a nonmatriculant may be applied toward total degree requirements. No matriculation fee is charged. If he has earned a 2.0 or higher average the nonmatriculant may apply for admission as a degree candidate, filing full credentials and paying the matriculation fee. Transcripts will not be officially evaluated for nonmatriculants.

Other types of nondegree students follow different admission procedures as indicated below.

THE UNCLASSIFIED STUDENT

A college graduate is permitted to take undergraduate courses as an unclassified student upon presentation of evidence of graduation.

THE TRANSIENT STUDENT

A student wishing to take courses for transfer to another college may do so at Wright State if he presents at registration each quarter an official transient student permit from the college accepting the course credit. This permit must include the number of credit hours the student has successfully completed.

THE SUPERIOR HIGH SCHOOL STUDENT

A superior high school student may enroll in some courses given at Wright State. To be admitted to these courses the high school student should be in the upper quarter of his class scholastically, be recommended by his principal, have the written consent of his parent or guardian, and place high on aptitude tests. Further information about this program may be obtained from the Director of Admissions.

Readmission to the University

Students in good standing who return to Wright State after an absence of one or more quarters, not including the summer quarter, must apply for readmission as a returning student through the Office of Admissions.

A Wright State student suspended for scholarship may be readmitted after at least one quarter has elapsed, upon petition to and approval of the Committee on Admissions. The committee will decide whether the student should return on the basis of his academic ability, his circumstances, and his motivation. The student should present evidence of a change in circumstances or conditions which will support his application for readmission. If the committee approves the student's readmission, he will return on probation and under whatever special circumstances the committee may deem advisable.

A second suspension constitutes dismissal. A student who has been dismissed may under unusual circumstances apply for readmission one calendar year after the date of dismissal.

Transcripts from all other colleges or universities of courses taken while under suspension or dismissal from Wright State will be considered for readmission and evaluated for transfer of credits.

Registration

The credit hour is based upon 50 minutes of instruction each week for a period of one quarter (i.e., a two credit hour course will normally require 100 minutes in class per week and a three credit hour course will require 150 minutes). Laboratory courses will generally require a somewhat greater expenditure of time for each credit hour earned. The student should expect to spend at least two hours in outside preparation for every credit hour of the class. In other words, for every class hour two additional hours are expected to be spent outside class in reading, writing, thinking, solving problems, or whatever may be required. For this reason, a student who holds outside employment should be careful in planning his academic program and should discuss his work load with his adviser before registration.

Twelve credit hours are considered a minimum full-time undergraduate student load during the fall, winter, or spring quarters. The full-time load is usually between 14 and 17 credit hours per quarter.

Nine credit hours are considered a minimum full-time

graduate student load during fall, winter, or spring quarters.

A normal full-time load is between 6 and 9 credit hours for summer term A or B.

It is recommended that those students employed full time register for no more than 6 quarter hours credit or two courses during the fall, winter, or spring quarter, and one course or 3 credit hours during any one term of the summer quarter.

Registration Procedure

Prior to registration, each full-time student will be advised by a member of the faculty or a University Division adviser. Sophomore, junior, and senior students will come under the guidance of an adviser assigned according to the program the student is pursuing. Even though each student (part-time or full-time), regardless of classification, is encouraged to seek guidance from his adviser as well as other faculty and staff members, *the ultimate responsibility for selection of courses based upon the requirements of the university, division, and program, as prescribed in the University Bulletin, remains with the student.*

The dates of registration are announced in the appropriate quarterly schedule of classes. Admitted students — new, transfer, and continuing — may register for work in any quarter in which appropriate courses are offered. Students who register early must pay fees by the date specified in the schedule of classes; unpaid registrations will be cancelled to free class space for students registering after that date. Each student whose registration has been cancelled may reregister during mass registration or as described below.

Registration will not be accepted after the first week of the quarter unless the instructor, department chairman, and dean of the college approve the late registration during the second week. No registration will be accepted after the second week of the quarter. No student may be admitted to a class for which he is not properly registered.

Cross Registration with Dayton-Miami Valley Consortium

Regularly enrolled full-time students of Dayton-Miami Valley Consortium institutions, under the conditions set forth below, may register for credit in courses offered by other consortium institutions at no additional charge, on a space-available basis. This policy applies *only* to the regular sessions of the regular academic year, and specifically excludes summer sessions and other self-supporting or self-sustaining programs.

If a student of one consortium institution desires to take a course in another consortium institution, the following conditions must be met: (1) the student is regularly enrolled as a *full-time student* of a consortium institution; (2) he has obtained his adviser's consent for the desired course; (3) the course is not currently available at his home institution; (4) he satisfies all course prerequisites and is acceptable to the host institution; and (5) space in the desired course is available.

Reserve Officers Training Corps

Although an ROTC program has not been established at Wright State University, arrangements have been made for those students interested in Army ROTC to enroll in the program at Central State University or the University of Dayton under the terms of the Dayton-Miami Valley Consortium. Students may enter the four-year program as freshmen or the two-year program as upperclassmen or graduate students. The office of the Dean of Students should be contacted for further information.

Changes of Program and Withdrawals

No change in registration is made until the change of program form has been accepted by the Office of the Registrar and the fee for dropping or changing classes has been paid. There is no fee for adding courses, although instructional and general fees are charged when applicable.

Course additions must be completed by the end of the first week of the quarter. However, department chairmen and deans of the division may approve course additions until the end of the second week of the quarter.

A student may drop a course or withdraw from the university without grade up to the date specified in the university calendar (about the eighth week in the quarter). No record of these courses will appear on the student's transcript. A drop or withdrawal without record after the date specified in the university calendar may be permitted when the circumstances are beyond the control of the student. Permission may be granted only by petition to a college or division petitions committee with the concurrence of the University Petitions Committee. A student who stops attending a course and does not make an official withdrawal will receive a grade of F.

The student should note that the withdrawal dates pertaining to refund of instructional and general fees presented in the *Schedule of Classes* may differ slightly from withdrawal dates as they pertain to grades.

Class Rank Definitions

Freshman	0-35 hours earned, including accepted transfer credit.
Sophomore	36-80 hours earned, including accepted transfer credit.
Junior	81-125 hours earned, including accepted transfer credit.
Senior	126 + hours earned, including accepted transfer credit.
Unclassified	holds baccalaureate degree from an accredited institution.
Graduate	formally admitted to Graduate School

Hours Earned refers to hours passed and transfer credit. *Hours Attempted* refers only to hours attempted at Wright State, including those in which the grade has been F.

Grade Explanation

Academic achievement is indicated by the following letter grades and points used in calculating grade-point averages:

A	4 points	Highest Quality
B	3 points	Second Quality
C	2 points	Third Quality
D	1 point	Lowest Quality
F	0 points	Failed
I	0 points	Incomplete

The grade of incomplete is given only when part of the work required is missing and arrangements have been made with the instructor to complete the work. An I received in one quarter must be removed at a time established by the instructor, but no later than the end of the next quarter (excluding the summer quarter). If not removed, the I automatically becomes an F.

The following symbols appear on the record, but are not included in calculating grade point averages:

L — Audit; given only if arranged for at the time of registration.

N — No report; instructor did not report grade.

P — Passing; given only for separately approved courses.

S — Satisfactory performance — final grade assigned upon completion of the project.

U — Unsatisfactory performance.

Grade reports are mailed as soon after the end of the quarter as possible.

Course Repeat

An undergraduate student may repeat once any course

which he has taken previously and for which he has received the grade of F or D. A student with the permission of his adviser and the approval of his divisional petitions committee and concurrence of the University Undergraduate Petitions Committee may repeat once some courses in his major field which he has taken previously and for which he has received the grade of C. Only hours and grade points earned the last time the course is taken will be included in the computing of grade point averages and meeting degree requirements. Whenever a course is being repeated under the above terms, it must be so specified by the student at the time of registration on his course registration form.

The cumulative grade point average at the end of the quarter will reflect the drop of previous hours and grade points of the repeated course. However, all grades and grade point averages and academic actions for earlier terms will remain unchanged on the record. In the calculation of cumulative grade point averages for honors, each grade recorded for the student will be considered.

Course Audit

A student may audit a course if space permits and he has the written approval of the instructor prior to enrollment. The degree of participation required of an auditing student is left to the discretion of the professor but must not exceed the requirements placed on regular students. Audited courses will not be counted toward the establishment of full-time status. Registration for audit cannot be changed to registration for credit after the first meeting of the course.

Credit by Examination

College credit may be earned by examination for many courses offered at the university. More detailed information can be provided by the department offering the course or by the University Testing Service of the University Counseling Services.

Change of Address

A student is responsible for a university office communication sent to him at the last address reported to the Office of the Registrar. Forms for reporting a change of address are available in the Registrar's office.

Degree Applications

The university has established the following filing periods for submitting applications for degrees: if the anticipated

completion date is December, the filing period is from September 1 to October 1; for an anticipated completion date of March, the filing period is from December 1 to January 15; for anticipated completion date of June, the filing period is from February 1 to March 1; for anticipated completion date of August, the filing period is from March 1 to April 1 if the student intends to participate in the June Commencement — otherwise the filing deadline is June 1. If the degree requirements are not completed at the time specified, another application, which will replace any previously submitted, must be filed. All diplomas will be issued on or after the annual June Commencement; December and March graduates will receive letters of certification indicating completion of degree requirements.

Scholastic Regulations

Scholastic actions (i.e., placement on probation or removal from probation, suspension for scholarship, and dismissal for scholarship) are taken by the Registrar on the basis of quarter averages computed in the Office of the Registrar.

Since credit hours for transfer, proficiency, and grades of S and P are disregarded in the computation of the quarter and cumulative averages, they are not considered in determining scholastic actions.

Although the points for an incomplete are zero, academic actions are based on the tentative grade which the instructor assigns, but which he is not obligated to assign as the final grade. (See also section entitled *Grade Explanation.*)

A student carrying nine or more credit hours in any quarter is subject to scholastic action as if he were carrying a full load. A student carrying fewer than nine credit hours quarterly is subject to scholastic action at the close of the quarter in which the total credit hours completed or attempted reaches or exceeds twelve, and at the completion of each quarter thereafter in which he attains a similar twelve-credit-hour increment.

Probation

A first-quarter freshman whose grade point average for that quarter is below a 2.0, and any other student whose grade point average is between 1.0 and 2.0 shall be placed on probation for one quarter.

At the close of a quarter of probation, one of the following actions shall be taken: (1) If a student's grade point average for the quarter is 2.0 or higher and his cumulative

average (for all academic work to date) is 2.0 or higher, he shall be *removed from probation.* (2) If a student's grade point average for the quarter is 2.0 or higher but his cumulative average is below 2.0, he shall be *continued on probation.* (3) If a student's grade point average for the quarter is between 1.0 and 2.0 but his cumulative average is still above 2.0, he shall be *continued on probation.* (4) If a student's grade point average for the quarter is below 2.0 and his cumulative average is below 2.0, he will be *suspended for scholarship* for a period of one quarter.

Suspension for Scholarship

A student will be suspended for scholarship for one quarter if (1) while on academic probation his grade point average for the quarter is below 2.0 and his cumulative average is below 2.0, or (2) he is not a first-quarter freshman and his point average for a quarter is lower than 1.0. The student may be readmitted through application for readmission to the Admissions Committee. Readmission is not automatic. A student readmitted after being *suspended for scholarship,* reenters on *probation.*

Dismissal for Scholarship

A second *suspension for scholarship* while on probation constitutes *dismissal for scholarship* from the university for a period of one calendar year. After that period, the student may be readmitted through application for readmission to the Admissions Committee. Readmission is not automatic. A student readmitted after being *dismissed for scholarship,* reenters on *probation.*

Petition

A student may petition for an exception to any of the academic regulations. The petition is acted upon by the divisional petitions committee. All decisions on petitions are subject to review by the University Undergraduate Petitions Committee, which may either affirm or reverse them. Petition forms may be obtained and submitted through the Office of the Registrar.

Financial Policies

All fees and charges for preregistered students shall be paid by the dates specified in the university calendar published in the quarterly schedule of classes. Registration fees not paid by those dates shall result in cancellation of the regis-

tration to make class space available for students registering later. For students who do not register early, all fees and charges are due and payable at the time of registration. No registration or payment will be accepted after the first week of classes without the proper approval (see Registration Procedure).

A payment made with a bad check may result in cancellation of the student's registration. A charge is made by the Bursar to reprocess a payment previously made by a bad check. Such charges must be paid on the day of the reprocessing.

Fee assessments are subject to audit at any time throughout an enrollment period or the academic career of the student. Students who do not make acceptable arrangements to pay the appropriate sum within thirty days after they have been notified that the adjusted fees are due will have their current registration cancelled.

Wright State University shall not defer the payment of fees or accept partial payments. To provide an additional receipt, it is to the student's advantage to pay fees by check or money order, made payable to Wright State University and forwarded to the attention of the bursar's office. The check or money order should be written in the exact amount of the fee being paid. Checks or money orders that are not made out for the exact amount of the fees charged will be returned to the student and the registration cancelled if a new check or money order in the correct amount is not received on or before the published deadline date for payment of fees.

The university does accept payment through an optional monthly payment plan administered by Education Funds, Inc. Full information on this plan may be obtained by contacting the university's Office of Financial Aid.

Refund of Fees

The schedule of refunds may be found in the quarterly schedules of classes. A refund will not be allowed unless the withdrawal is made through the Registrar's Office; it will be computed from the day such withdrawal is reported to the Office of the Registrar.

Nonresident Tuition

Students attending Wright State University who reside in a state other than Ohio are required to pay a tuition fee as described. The burden of registering as a nonresident of Ohio is placed upon the student. Any false statement of residence by a student for the purpose of avoiding the

proper payment of the tuition fee may result in disciplinary action. Any claim by a student to a change in the facts of residence, or any doubtful set of facts, should be set forth in writing to the Registrar of Wright State University for his determination.

The following general rules, established by the Board of Regents for all state universities, govern the payment of the tuition fee.

RULES GOVERNING OHIO RESIDENCY

In determining whether or not an enrolled student is an Ohio resident for purposes of the appropriation subsidy, each state-assisted institution shall make a determination of fact in accordance with these standards:

1. A dependent student shall be considered to be a resident of Ohio if his or her parents or legal guardian have resided in Ohio for 12 consecutive months or more immediately preceding enrollment, or if his or her parents reside in Ohio at the time of enrollment and at least one of the parents is gainfully employed on a full-time basis in Ohio.

2. A student shall be considered to be an Ohio resident regardless of the place of residence of the parents or legal guardian at the time of enrollment if the student resides in Ohio and has resided in the state for 12 consecutive months or more immediately preceding enrollment and if the student presents satisfactory evidence that the parents or legal guardian have not contributed to his or her support during the preceding 12 months and do not claim him or her as a dependent for federal government income tax purposes.

3. A student shall be considered to be an Ohio resident regardless of the place of residence of the parents or legal guardian at the time of enrollment if the student is gainfully employed on a full-time basis and resides in Ohio, and is pursuing a part-time program of instruction and if there is reason to believe that the student did not enter Ohio primarily for the purpose of enrolling in an Ohio institution of higher education.

4. The residency status of a married student shall be determined without regard to the residency status of the student's spouse.

5. A person in military service or the dependent of a person in military service shall be considered to be a resident of Ohio during the period of time when that person is on active duty status in Ohio and has established a residence in Ohio.

6. A person who enters upon active duty status in the military service as a resident of Ohio and the dependent

children of such a person shall be considered to be residents of Ohio if they provide proof of continued domicile in Ohio and of continued eligibility to vote in Ohio.

7. A student classified as a resident of Ohio whose parents or legal guardian move their residence to another state shall be considered to be a resident of Ohio until completion of the degree program in which the student is currently enrolled.

8. A student who at the time of enrollment enters the State of Ohio from another state for the primary purpose of enrolling in an Ohio institution of higher education shall be considered to be a nonresident student, and shall continue to be so considered during the period of continuous enrollment as a full-time student in an Ohio institution of higher education.

9. An alien student admitted to the United States on a student visa or other temporary visa shall be considered to be a nonresident student. An alien holding an immigrant visa may establish Ohio residency in the same manner as a citizen of the United States.

10. A student classified as a nonresident student may be reclassified as a resident of Ohio for higher education subsidy purposes if:

a. the dependent student presents conclusive evidence that his or her parents or legal guardian have established a residence in Ohio and at least one of the parents is gainfully employed on a full-time basis in Ohio;

b. the student, in addition to demonstrating financial independence from parents, presents clear and convincing evidence of exceptional circumstances justifying a change in classification because of having established a separate residence in Ohio for 12 months or more preceding the request for reclassification and because of having made a definite commitment to enter into gainful employment in Ohio upon completion of a degree program within the ensuing 12 months.

Financial Aid

Wright State University provides opportunities for financial assistance to the ambitious and promising student who needs help in meeting the costs of college attendance. The university feels that the primary responsibility for financing a college education rests with the student and the student's family. However, many circumstances can limit the financial resources available to the student. Individual

eligibility for assistance is established on the basis of proven financial need, academic potential and achievement, and other specific criteria set forth by the type of assistance available.

To assist students who have an established financial need, the university offers assistance in the form of scholarships, grants-in-aid, loans, and employment. Students desiring to apply for these types of assistance must contact the Office of Financial Aid for the appropriate forms.

General Information

The Office of Financial Aid attempts to provide as much assistance in relation to the student's need as funds will allow. Because scholarship and grant funds are limited, a student's need cannot always be met with these types of gift aid. Therefore, several types of financial aid may be combined. It is not uncommon for a student, particularly one with a great need, to receive assistance in the form of scholarships, grants, loans, and employment earnings, or some combination of these types. In offering a student a particular financial aid package, the Office of Financial Aid attempts to arrange a combination of aid in a manner that will be most beneficial to the student.

Funds are allocated on a three quarter basis. As long as the student remains in need of the financial aid and remains in good academic standing, the award will remain in effect for the three quarter academic year. A new application for assistance and a new financial statement must be filed each academic year.

Notification must be made to the Office of Financial Aid of any additional financial assistance received after filing an application. Any change in the student's or the family's financial aid office of any change in program, residence, dents granted assistance are responsible for notifying the financial aid office of any change in program, residence, telephone number, or marital status. Failure to carry out any of these responsibilities may result in cancellation of the student's award.

Application Procedures

Wright State University maintains two types of applications for financial assistance. Upperclass students interested only in the Wright State University Foundation Scholarship Program must file a special upperclass scholarship application. Students interested in all other types of assistance must file the regular application for financial assistance. Both types of applications may be obtained by contacting

the Office of Financial Aid at Wright State University.

Awards cannot be finalized until the student has completed the admission process. Entering freshman and transfer students should be sure that a transcript of credits has been sent to the Office of Admissions to complete their admissions application.

DEPENDENT STUDENTS

In addition to filing an application for financial aid, students who are receiving financial assistance from their families must have their parents fill out a Parent's Confidential Statement and send it to the College Scholarship Service. These forms may be obtained from a high school counselor or the Office of Financial Aid. Allow approximately four weeks for the College Scholarship Service to process the Parent's Confidential Statement.

MARRIED OR INDEPENDENT STUDENTS

Married students or students who are not receiving financial assistance from their parents are required to contact the Office of Financial Aid so that independent status can be established. Once independent status is determined, the student must complete an application and a Student's Financial Statement. The Student's Financial Statement can be obtained from the financial aid office and should be sent to the College Scholarship Service for processing.

APPLICATION DEADLINE

The deadline for scholarship applications is April 15. Applications for other forms of assistance should be submitted by July 1. After this date, applications will be accepted only if resources are available.

Scholarships

GENERAL SCHOLARSHIPS

Scholarships are granted to incoming freshmen on the basis of performance and potential, and to upperclassmen for outstanding performance and achievement. In selecting recipients of scholarships, consideration is given to academic excellence, character, leadership, general accomplishment, potential, and financial need. As long as the student maintains a satisfactory scholastic record and remains in need of assistance, a scholarship may be renewed annually.

WRIGHT STATE UNIVERSITY FOUNDATION SCHOLARSHIPS

The Wright State University Foundation has established a

scholarship program for both freshmen and upperclassmen who meet the following criteria: scholarships are awarded to incoming *freshmen* on the basis of their academic potential and past performance, standardized test results, rank in class, extracurricular activities, as well as by personal recommendations submitted by high school counselors or principals.

Upperclass scholarships are awarded on the basis of past performance at Wright State University and personal recommendation. Generally, a student is expected to have a 3.000 average or above at Wright State University and must be personally recommended by at least two faculty members. This scholarship is an outright gift of money and does not need to be repaid. Financial need is not given consideration in awarding these scholarships. The deadline for all Wright State University Scholarship applications is April 15.

Grants

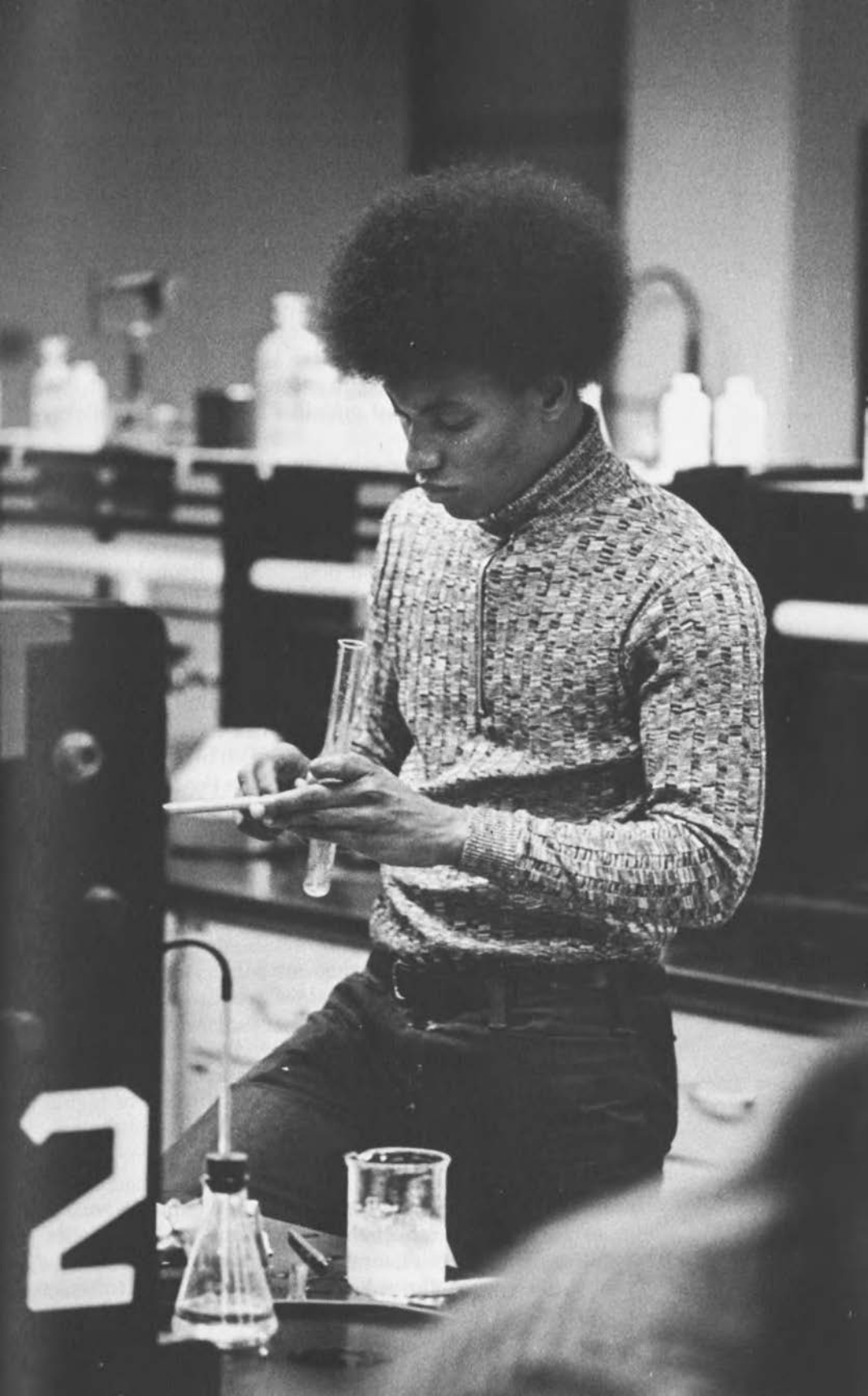
EDUCATIONAL OPPORTUNITY GRANTS

The Higher Education Act of 1965 authorized an assistance program designated as Educational Opportunity Grants for students whose family resources would indicate a limited amount of financial assistance from the parents. The grant is an outright gift but must be matched by an equal amount from scholarships, loans, or campus employment. Therefore, it will be necessary for the recipient of an Educational Opportunity Grant to accept a loan, scholarship, or employment.

OHIO INSTRUCTIONAL GRANTS PROGRAM

The Ohio Instructional Grants Program is a financial aid program intended to assist Ohio students having exceptional financial need. Grants range in size from $90.00 to $510.00 depending upon the adjusted effective income of the family and the number of dependent children in the family.

To be eligible for the grant, a student must be a resident of Ohio, be enrolled as a full-time undergraduate student in an eligible Ohio institution of higher education, be making appropriate progress toward a degree, not be enrolled in a course of study leading to a degree in theology, religion, or other field of preparation for a religious profession, and have met the necessary standards for establishing financial need. A student's eligibility for the grant will be determined each year.



Loans

NATIONAL DEFENSE STUDENT LOANS

Since 1958, the federal government has been allocating federal funds to institutions of higher education to be loaned to students who need financial assistance to attend college. An undergraduate student may borrow up to one thousand dollars ($1,000) each academic year to a total of five thousand dollars ($5,000). Graduate students may borrow as much as two thousand five hundred dollars ($2,500) per year. The repayment period and interest on these loans do not begin until nine months after the student terminates his education. The loan bears interest at the rate of 3% per year and repayment of principal may be extended over a ten-year period.

If a borrower becomes a full-time teacher in an elementary or secondary school or in an institution of higher education, as much as one-half of the loan may be forgiven at the rate of 10% for each year of teaching service. Borrowers who elect to teach in certain designated schools located in areas of primarily low-income families may qualify for cancellation of their entire obligation at the rate of 15% per year. Borrowers who enter the Armed Forces of the United States are eligible to receive cancellation at the rate of 12½% of the total amount of the loan (plus interest) for each year of consecutive military service for a maximum of four years. Repayment may be deferred up to a total of three years while a borrower is serving with the Peace Corps or as a Volunteer in Service to America (VISTA). Repayment is deferred for as long as a borrower is enrolled in an institution of higher education and is carrying at least a half-time academic load.

CUBAN LOANS

The federal government makes available long-term, low-interest loans to Cuban Nationals who are presently in the United States and unable to receive support from sources within Cuba as a result of actions by the Cuban Government, and who are without sufficient resources in the United States to finance their attendance at institutions of higher education.

SHORT-TERM LOANS

Students at Wright State University are eligible to borrow up to $150 from a short-term loan fund for emergency purposes. The entire amount of the loan must be paid in full by the end of the school term in which the money is borrowed.

Employment

COLLEGE WORK-STUDY PROGRAM

Students, particularly those from low-income families, who need jobs to help pay for college expenses, are potentially eligible for employment under federally supported Work-Study Programs.

Work-Study jobs are usually on campus and are available in offices, laboratories, libraries, and elsewhere. A student typically works fifteen hours per week while attending classes full time. When classes are not in session, he may work up to forty hours per week. Whenever possible, Work-Study students will be assigned to jobs compatible with their particular skills or major interests.

Supplemental Types of Financial Assistance

GUARANTEED LOAN PROGRAM

For a loan under this program, the student applies directly to a bank or other financial institution in his home state. If the student comes from a middle-to-upper level income family, he may more readily qualify for a Guaranteed Loan than for a National Defense Student Loan. A student may borrow as much as fifteen hundred dollars ($1,500) per year.

SOCIAL SECURITY BENEFITS

Extended Social Security benefits are available for children up to 22 years of age whose parent, or parents, are receiving Social Security benefits. Consult your local Social Security Office for details.

VETERANS BENEFITS

The Veterans Administration provides monthly educational allowances to certain veterans, veterans' widows, and children of deceased or disabled veterans. Contact your Veterans Administration Office or the Office of Financial Aid for information and application forms.

Schedule of Fees and Tuition per Quarter*

Fee schedules are dependent upon action by the state legislature and approval by the Ohio Board of Regents and the university Board of Trustees. Fees are subject to increase or decrease. The fees listed here are effective for the fall quarter of the 1972-73 academic year. *Students should obtain a current fee schedule from the Office of the Registrar.*

Undergraduate Students	MAIN CAMPUS	CELINA BRANCH	PIQUA CENTER
FULL-TIME/12 THROUGH 18 HOURS*			
Instruction fee	$205	$205	$205
General fee	45	20	9
Nonresident tuition/add to above	300	300	300
Total: Ohio resident	250	225	214
Total: nonresident	550	525	514
PART-TIME/1 THROUGH 11 HOURS/PER HOUR			
Instruction and General fee	22	20	19
Nonresident tuition/add to above	25	25	25
Total: Ohio Resident	22	20	19
Total: nonresident	47	45	44

Graduate Students			
FULL-TIME/12 THROUGH 18 HOURS*			
Instruction fee	$260	$260	$260
General fee	25	11	5
Nonresident tuition/add to above	300	300	300
Total: Ohio resident	285	271	265
Total: nonresident	585	571	565
PART-TIME/1 THROUGH 11 HOURS/PER HOUR			
Instruction and General fee	24	23	22
Nonresident tuition/add to above	25	25	25
Total: Ohio resident	24	23	22
Total: nonresident	49	48	47

Additional Fees and Charges

Late Registration Fee per calendar week/beginning first day of classes	$10
Course Audit/per course/not all courses open to audit	$15
Course Drop Fee/drop only	$ 5
Change of Class Fee/drop and add at student request through second week of classes	$ 5
at student request through eighth week of classes	$10
at student request after eighth week of classes	$15
Application Fee to Degree Programs/nonrefundable undergraduate	$25

*The part-time quarter-hour rate will apply to all hours in excess of 18.

graduate/Wright State University graduates	$10
graduate/others	$20
Nonmatriculant Application Fee/nonrefundable	$ 5
Applied Music Charge	
one half-hour lesson per week/ 1 or 2 credit hours	$30
one one-hour lesson per week/4 credit hours	$60
Proficiency Test/per quarter hour	$ 5
Graduation Fee	$10
Transcript Fee/one free/each thereafter	$ 1
Replacement Fee for I.D. cards	$ 2
Returned Check Penalty/per check	$10

Library fines for late return of books and charges for lost books to be set by the Director of the University Library with approval of the Vice-President *and* Treasurer.

All fees and charges for early-registered students shall be paid by the dates specified in the class schedules each quarter. Unpaid registrations shall be cancelled to make class space available for students registering later. After the dates specified all fees and charges are due and payable at the time of registration. No registration or payment will be accepted after the first week of classes.

Undergraduate Programs

Degrees Offered

Wright State University grants the following baccalaureate degrees:
Bachelor of Arts
Bachelor of Fine Arts
Bachelor of Music
Bachelor of Science
Bachelor of Science in Business
Bachelor of Science in Education

University Degree Requirements

Every bachelor's degree candidate must meet the university's requirements and the requirements of the student's academic college. Specific requirements for the General Education program and for each college are listed below.

Each candidate for a degree must complete a minimum of 183 hours of credit in approved courses. He must earn a cumulative average of 2.0 or better, complete the General Education Requirements, and fulfill the on-campus credit regulations of the university.

A student must meet the university, college, and departmental requirements for graduation as specified in the university regulations which are current at the time he enters

the university, or he may choose to elect any subsequent set of requirements which becomes effective while he pursues his studies. Fulfillment of these requirements is subject to the validation of the major department and of the college prior to graduation.

Graduation With Honors

Academic achievements of graduating seniors are recognized at commencement. Honors are granted on the following basis: Summa Cum Laude — grade point average of at least 3.8; Magna Cum Laude — grade point average of at least 3.6; and Cum Laude — grade point average of at least 3.4.

A student must have completed at least ninety hours at Wright State University in order to be eligible for graduation with honors.

On-Campus Credit Regulations

To receive a baccalaureate degree from Wright State University, a student must satisfy the following residence requirements on the main campus, branches, or academic centers: (1) a minimum of forty-five hours of course work must be taken from Wright State; (2) at least fifteen of the last forty-five hours of credit needed for the degree must be taken from Wright State; (3) a minimum of thirty hours of credit in courses numbered 300 or above must be taken from Wright State.

A person holding a baccalaureate degree from an accredited institution (including Wright State University) who wishes to earn a second baccalaureate degree from Wright State University must satisfy the requirements of the department and college through which he expects to receive the second degree. He must take at least forty-five hours of course work at Wright State, at least twenty-three of which must be in courses numbered 300 or higher.

General Education Requirements

Fourteen of the courses required for graduation will be those which meet the General Education (GE) requirement. It includes three areas: Area One, English composition (two courses); Area Two, laboratory science (three courses); Area Three, Group A, Social Science (minimum of three courses); Area Three, Group B, Humanities (minimum of three courses). A minimum of nine courses must be taken in Groups Three A and B combined. The total number of hours for General Education will vary, normally from forty-five to fifty-one. [An average of forty-seven hours is indicated in individual programs listed in this chapter.]

At the option of a student's major department, courses

required for the major or related field which also satisfy General Education requirements may be used to meet both simultaneously.

A list of specific requirements and departmentally approved offerings is given below. Most of these offerings are stated in terms of sequences. A sequence is a set of courses which must be taken in numerical order. A sequence course can be used to meet General Education requirements *only* if the remaining courses in that sequence are also completed. The reason for this is that the material of the courses that make up a sequence is closely interwoven, so that one course taken by itself is not very meaningful.

If a department has modified these sequence requirements by allowing courses to be taken out of numerical order, by allowing substitutions for courses in the sequence, or by not requiring that a sequence be completed, this will be indicated in its listing. If a departmental listing states that there are no sequence requirements for introductory courses, this means that they may be taken in any order, and that each counts separately toward meeting GE requirements, even if no other course in that department is completed. Upper division courses listed by any department will normally carry prerequisites. The student should check the course description chapter of this bulletin before enrolling in such courses.

General Education requirements apply to all matriculant (degree-seeking) students except those enrolled in that status prior to fall quarter 1969. With the approval of their major department, the latter may complete General Education requirements in place of Common Curriculum requirements. Under special conditions, the total number of courses required for GE is reduced. These include satisfactory completion of proficiency examinations for courses listed, departmental waivers of one quarter of a sequence due to the conversion from trimester to quarter systems at Wright State in 1968, or evaluation by a department of a two trimester or semester sequence as the full equivalent of one of its three quarter sequences. In all such cases, the student or his adviser should consult with the department concerned.

AREA ONE

Two courses in English composition. This sequence consists of ENG 111 and 112 and should be completed no later than the end of the sophomore year.

AREA TWO

Three courses. A three-course sequence to be chosen from one of the following laboratory sciences:

General Education Requirements

Biology	BIO 111, 112, and 113 or 114. No other courses in biology are applicable toward this requirement.
Chemistry	CHM 101, 111, and 131. An introductory sequence for students with no prior experience in chemistry. CHM 111, 121, and 131. A sequence for students who have had some prior experience in chemistry. Prepares students for further study in chemistry. Other combinations of courses at a higher level are encouraged and may be arranged with departmental advice. However, CHM 319, 488, and 499 are not acceptable.
Geology	GL 101, 102, and 103. Note: GL 201, Water Resources, or GL 203, Minerals and Rocks, may be substituted for GL 103.
Physics	PHY 121, 122, and 123 or PHY 111, 112, and 113 or any other higher one-year sequence. PHY 150, 151, and 152 are not acceptable.
Physical Science	(Elem. Educ. majors only) The sequence ED 241, 242, 243.

AREA THREE

Nine courses are required, with at least three courses in each of Groups A and B. Provided that any indicated sequence requirements are met, a student may select courses from more than one department in a group, and may take either three, four, five or six courses in one group and the rest in the other group.

Group A — A minimum of three courses (9 or 18 hours).

Economics	The sequence EC 201, 202, and 203.
Education	(Education Majors only) PSY 111, PSY 112, ED 202, ED 203. This sequence counts as three courses in meeting GE requirements. In special cases ED 201 may be offered by the College of Education to replace PSY 111, 112. (Previously enrolled students may be eligible to complete ED 201, 202, and 203 instead.)
Geography	All courses are suitable. Introductory courses have no sequence requirements.
History	All courses are suitable, providing prerequisites have been completed for any upper division course selected. There are no sequence requirements for introductory courses. Suggested course combinations are History 111, 112, 113, American Civilization; any three of History 120, 121, 122, 123, European Civilization; History 201, 202, 203, Latin America; History 211, 214, 215, Africa and the Negro in American History.

Political Science	PLS 111 may be taken alone, or it may be followed by any other political science course except PLS 410, 420, 460, 470, 490, 491, 492, 493, 494. Suggested course combinations include PLS 111, 112, and 113; PLS 111, 122 and 123; or PLS 111, 225, and 461.
Psychology	The sequence PSY 111 and 112.
Sociology and Anthropology	The sequence SOC 111, 112, Introductory Sociology and SOC 200, Social Problems. ANTH 140, Cultural Anthropology, 141, Physical Anthropology, and 142, Archaeology, may be taken in any sequence but it is advisable to take 140 first.

Group B — A minimum of three courses (9 or 18 hours).

Art	Art 111, 112. No sequence requirements.
Classics	All courses suitable. There are no sequence requirements.
English	The following courses are appropriate for General Education Requirements: ENG 190, 201, 202, 203, 204.
Music	MUS 111, 112. No sequence requirements.
Modern Languages	The following literature courses are recommended: ML 111, 112, 113, 114; FR 301, 302, 303; GER 301, 302, 303; RUS 301, 302, 303; SPN 301, 302, 303. There are no sequence requirements.
Philosophy	All courses suitable. There are no sequence requirements.
Speech and Theatre	All courses suitable except SPC 121, 125, and 127.
Religion	All courses suitable. There are no sequence requirements.

College Requirements

The College of Business and Administration

The College of Business and Administration offers the following majors leading to the Bachelor of Science in Business degree:

Accountancy	Marketing
Business Economics	Office Administration
Business Science	Prelaw
Finance	Quantitative Business Analysis
International Business	Technically Combined Curriculum
Management	

Candidates for the Bachelor of Science in Business degree must fulfill the university General Education Requirement during the freshman and sophomore years. All majors will take a basic core of courses, indicated in the programs for individual majors. In addition, each major is expected to

complete the sequence of required professional courses, professional electives, and non-professional electives as set forth in the appropriate program. Professional elective courses may be selected from offerings of the Departments of Accountancy, Administrative Sciences and Finance, Economics, Management, and Marketing. Nonprofessional electives must be selected from departments of the university other than those in the College of Business and Administration and must constitute at least forty percent of the work toward the degree.

TRANSFER STUDENTS

The college reserves the right to limit the number of transfer hours. Credits earned in junior or community colleges will normally apply only to the requirements of the freshman and sophomore years.

The College of Education

The College of Education offers four-year curricula leading to the Bachelor of Science in Education degree in the following fields:

ELEMENTARY — Grades Kindergarten-8
Kindergarten-Primary (K-3)
Elementary Education (1-8)
Elementary and Mentally Retarded Education
Mentally Retarded Education

SPECIAL FIELDS — Grades 1-12
Art Education
Music Education (see Music)
Rehabilitation Education

SECONDARY — Grades 7-12
Major Teaching Fields
- Biological Science
- Business Comprehensive
- Chemistry
- Earth Science
- English
- History
- Mathematics
- Modern Languages (French, German, Spanish)
- Physics
- Social Studies Comprehensive
- Speech and Theatre

Second Teaching Fields
- Art Education
- Biological Science
- Earth Science
- Economics
- Educational Media
- English
- General Science
- Geography
- History
- Latin
- Mathematics
- Modern Languages
- Physics
- Political Science
- Sociology
- Speech and Theatre

ELEMENTARY EDUCATION

For graduation with the Bachelor of Science degree with certification in elementary education, the minimum requirement is 192 credit hours (which may include three hours of college service physical education), fulfillment of the university degree requirements, and a cumulative grade point average of 2.0. Of the 192 hours, a minimum of 44 hours of professional education and 135 credit hours of general education is required for the degree and recommendation for Ohio certification in elementary education.

SECONDARY EDUCATION

For graduation with the Bachelor of Science in Education degree with certification in secondary education, the minimum requirement is 192 credit hours (which may include six hours of college service physical education). A cumulative grade point average of at least 2.0 and a minimum of 2.25 in each teaching field is required. Of the 192 hours, a minimum of 32 hours of professional education and 150 credit hours of general education (including teaching fields) is required for the degree and recommendation for Ohio certification in secondary education.

Curricula in secondary education prepare students to teach the academic subjects in grades seven through twelve. All programs include the university general education requirement, completion of the appropriate speech requirement, fulfillment of the requirements established in a major teaching field, and completion of the professional education sequence. A student may have a major and one or more second teaching fields; two majors; or a comprehensive field. If a student has taken the curriculum and materials course in his major field, he is not required to take a comparable course in his other fields although he may do so. If the two fields are unrelated, a second curriculum and materials course is strongly recommended. The College of Education considers the minimum requirements for a second field inadequate for effective teaching except on an emergency basis unless they are supported by a closely related field. It is advisable, therefore, that a student choose closely related supporting fields or plan to take more than the minimum work in the second field.

Because of the sequential character and prerequisites in both the professional and academic components of many of the programs, the student is strongly advised to consult an adviser before registering.

PROFESSIONAL LABORATORY EXPERIENCES

Students will be required to engage in some form of ap-

proved work with children at the time they are enrolled in the professional education courses which precede student teaching. Typical of these required experiences are tutoring and classroom participation in an elementary or secondary school classroom. These experiences are prerequisite for student teaching.

Student teaching is a period of guided teaching under the direction of a qualified cooperating teacher. During this period, increased teaching responsibilities are added as the student teacher demonstrates his ability to assume more direction of the class. He also engages more or less directly in the wide range of a teacher's assigned responsibilities.

Formal application for student teaching (ED 419 and ED 429) must be made through the Office of Laboratory Experiences during the first two weeks of the quarter *prior* to student teaching. Student teaching is *full time for one quarter.* Concurrent enrollment in ED 422 is required during student teaching and constitutes a *full-time load* for one quarter. No additional course work should be scheduled.

ADMISSION AND RETENTION STANDARDS

Students admitted to the College of Education must meet the selection criteria defined by the College of Education faculty. Throughout his program, the student will be evaluated and final recommendation for a degree and for certification will be based upon consideration of character, ability, growth, and professional promise as well as upon the completion of the required number of hours and subjects in a given program.

REHABILITATION EDUCATION

The College of Education also offers a four-year curriculum leading to a Bachelor of Science degree with a major in Rehabilitation Education. Eligibility for this degree is dependent upon completion of a minimum of 192 credit hours including all university and major requirements. This program prepares students to work with the disabled and disadvantaged, but does *not* include teacher certification.

The College of Liberal Arts

The College of Liberal Arts offers work leading to the Bachelor of Arts degree in the following major fields:

Anthropology
Classical Humanities
Economics
English
French
Geography
German
Greek
History
Latin
Philosophy
Political Science

Religion
Social Work
Sociology
Spanish
Speech Communication
Theatre
Urban Studies

Eligibility for the Bachelor of Arts degree is dependent upon completion of the university degree requirements, the language requirement determined by the major department, and the requirements of a major made up of a departmental unit in courses taken in one or more departments. No more than sixty hours in the major department may be counted toward the degree. A minimum of 100 hours of work must be completed in the College of Liberal Arts. (Hours completed toward the major in economics are counted as part of the 100 hours.)

Work leading toward the Bachelor of Fine Arts degree is offered in art. Work leading toward the Bachelor of Music degree is offered in:

Music Education
Music Theory
Applied Music

Eligibility for the Bachelor of Fine Arts and the Bachelor of Music degrees is dependent upon completion of university degree requirements and those of the curriculum specified by the appropriate department.

College of Science and Engineering

The College of Science and Engineering offers work leading to the Bachelor of Science degree in the following major fields:

Biology
Medical Technology
Chemistry
Systems Engineering
Engineering Physics
Computer Science
Geology
Mathematics
Physics
Psychology

The Bachelor of Arts degree is granted with majors in the following fields:

Biology
Chemistry
Geology
Mathematics
Psychology

REQUIREMENTS FOR THE BACHELOR OF SCIENCE DEGREE

To be eligible for the Bachelor of Science degree a student must have:

1. Fulfilled the General Education requirements defined by the university.
2. Completed the residency requirement of forty-five hours at Wright State. At least fifteen of the last forty-five hours taken for the degree must be in residence.
3. Completed at least 183 credit hours of acceptable academic work with at least a 2.0 cumulative average and an average of at least 2.0 in the major field. A student may find

it necessary to earn more than 183 credit hours to complete the requirements of the curriculum under which he seeks to graduate.

4. Completed at least sixty-nine advanced credit hours (courses numbered 200 and above) applicable to the degree.
5. Completed at least fifty-four credit hours in one department; by permission of the chairman of the major department up to eighteen credit hours of this requirement may be taken in a closely related field.
6. Completed all the requirements in one of the approved programs of study set up by the departments.

Note: No more than ninety credit hours in any one department may be credited toward graduation.

REQUIREMENTS FOR THE BACHELOR OF ARTS DEGREE

To be eligible for the Bachelor of Arts degree a student in the College of Science and Engineering must complete all the requirements listed above for the Bachelor of Science degree and in addition must have:

1. Completed at least nine courses in departments outside the College of Science and Engineering. (The level and type of courses to be taken by the student are left to the discretion of the major department and are subject to its approval.) These courses are over and above those needed to fulfill the General Education requirement.
2. Completed at least three courses in a department other than his major in the College of Science and Engineering. These courses are to be taken in addition to those needed to fulfill the General Education requirements.

At the beginning of the junior year, students seeking certification to teach in secondary schools should make application for admission to the teacher certification program. This may be accomplished through a Record Analyst in the College of Education.

Fields of Study

The fields of study in which Wright State University offers course work leading to a baccalaureate degree follow in alphabetical order. Included in this section are detailed programs outlining requirements for a given degree.

In some cases the courses required in a program may count toward the General Education Requirement, hence the number of hours indicated for this requirement may vary. In many disciplines, the sequence of courses is critical and the suggested order should be carefully noted. All programs, however, should be planned in consultation with the student's adviser.

Any student who feels that he can demonstrate foreign language proficiency at the level required by his major department may apply to the Department of Modern Languages for permission to take an examination to prove his eligibility for exemption from or waiver of the foreign language requirement.

Students who elect majors through colleges other than the College of Education and who also desire secondary school certification, should contact a Record Analyst in the College of Education at the beginning of the junior year to work out a program for completion of the requirements for certification.

Accountancy
Anthropology
Art
Art-Education
Biological Science-Education
Biological Sciences
Business Economics
Business-Education
Business Science — see Administrative Sciences and Finance
Chemistry
Chemistry-Education
Classical Humanities
Computer Science
Earth Science-Education
Economics
*Economics-Education
*Educational Media
Elementary Education
Elementary and Mentally Retarded Education
Engineering
Engineering Physics — see Engineering
English
English-Education
Finance — see Administrative Sciences and Finance
French — see Modern Languages
Geography
*Geography-Education
Geology
*General Science-Education
German — see Modern Languages
Greek
History
History-Education
International Business — see Administrative Sciences, and Finance
Latin
*Latin-Education
Library Science-Education — see Educational Media
Management
Marketing
Mathematics
Mathematics-Education
Medical Technology — see Biological Sciences
Mentally Retarded (Slow Learner) Education — see Elementary Education
Modern Languages
Modern Language-Education
Music
Music-Education — see Music
Office Administration — see Administrative Sciences and Finance
Philosophy
Physics
Physics-Education
Political Science
*Political Science-Education
Prelaw — see Administrative Sciences and Finance, Political Science
Psychology
Quantitative Business Analysis — see Administrative Sciences and Finance
Rehabilitation-Education
Religion
Slow Learner Education — see Elementary Education
Social Studies-Education
Social Work
Sociology

*Second teaching field only.

*Sociology-Education
Spanish — see Modern Languages
Speech Communication
Speech and Theatre-Education
Systems Engineering — see Engineering
Technically Combined Curriculum — see Administrative Sciences and Finance
Theatre
Urban Studies

Accountancy

Students who elect to major in the accounting field may prepare themselves for a variety of careers in this area of concentration as well as fulfilling the education requirements for taking the Certified Public Accountant (C.P.A.) examination in the State of Ohio. This major also provides an excellent undergraduate background for a degree in law. While only one general program is offered, the careful selection of electives under the guidance of the student's faculty adviser leads to a variety of career preparations. An optional accounting internship program (ACC 481) is available for qualified students.

Transfer students who major in accountancy should note that at least 18 quarter hours of their accountancy courses must be taken at Wright State.

Bachelor of Science in Business Degree
College of Business and Administration

General Education Requirement	38
Professional Business Core	75
BUS 101, 102, 301, 302, 303, 350, 481, 482	24
MTH 158, 164, 130	9
ACC 201, 202, 203	9
EC 201, 202, 203, 301	12
ENG 331	3
FIN 301, 302	6
MGT 301, 302	6
MKT 301, 302	6
Requirements for Accountancy Major	39
ACC 304, 305, 306, 321, 322, 331	18
ACC 411, 421, 499	9
ACC 332, 407, 412, 422, 431 (choose two)	6
FIN 303	3
BUS 351 or 352	3
Professional Electives	9
Nonprofessional Electives	25
Total	186

Administrative Sciences and Finance

Students who elect a major within the Department of

Administrative Sciences and Finance must take course work in at least one of the following areas: finance, quantitative business analysis, office administration, prelaw, business science, technically combined curricula, and international business. Students should contact the department for check sheets outlining the program and for the assignment of an adviser.

Major in Finance: It is anticipated that students majoring in finance will be able to follow one of several alternate programs designed to give them a degree of specialization in a specific area of finance, while at the same time they are provided with a core of finance courses which will allow them to be well rounded in all aspects of the theory and the principles of finance.

The program which follows indicates departmental requirements. The finance major may choose an area of concentration and take the recommended courses; or, as an alternative to choosing an area of concentration, he may take two additional finance courses of his choice.

Bachelor of Science in Business Degree
College of Business and Administration

General Education Requirement		38
Professional Business Core		75
BUS 101, 102, 301, 302, 303, 350, 481, 482	24	
MTH 130, 158, 164	9	
ACC 201, 202, 203	9	
EC 201, 202, 203 (Gen. Ed.); 301	12	
ENG 331	3	
FIN 301, 302	6	
MGT 301, 302	6	
MKT 301, 302	6	
Required Courses for Major in Finance		21-28
FIN 401, 411	6	
ACC 302, 303	6	
Area of concentration		9-16
Financial Management	9-10	
FIN 303; ACC 301		
EC 315 or 402		
Investment Management and Analysis	12-13	
FIN 402; 480; 351 or 431		
EC 402 or 317		
Management of Financial Institutions	12-13	
FIN 412; 480; 351 or 431		
EC 402		
Real Estate	16	
FIN 331, 480; BUS 351, 352		
PLS 345		
Professional Electives		19-22
Non-Professional Electives		30-33
Total		186

Major in Quantitative Business Analysis: For the student who wishes to concentrate in the quantitative area of busi-

ness decision making, the quantitative business analysis curriculum is available. This program, utilizing calculus, consists of advanced work in electronic data processing and several courses in quantitative decision making.

Major in Office Administration: Concentration in office administration is intended for those students who wish to seek a professional career in managing office systems.

Major in Prelaw: A student may prepare for a law career by combining prelaw training in business administration with a law school degree. The basis of the general business prelaw program is saturation not only in business, but also in interdisciplinary work. As with all students contemplating graduate work, prelaw students are advised to see their advisers early both as to requisites of the prelaw program and as to desirable law schools.

Major in Technically Combined Curriculum: A student desirous of combining a major in business administration with a major concentration in another department of the university may do so by consulting with the chairman of the Department of Administrative Sciences and Finance. Programs which are tailored to the individual student's needs can often be worked out to provide the base for many varied curricula of professional study.

Major in Business Science: There is a growing demand for business administrators in the field of science and scientific research. Sales opportunities for pharmaceutical and chemical firms require not only a sense of business administration, but also a good basic knowledge in the science area. To accomplish a major in this area, a minimum of 30 hours must be taken in the Departments of Biology, Chemistry, Physics, or Geology over and above the science requirements of the General Education curriculum. Students interested in the business science curriculum should contact the chairman of the Department of Administrative Sciences and Finance, who will assist the student in making out a complete program of prescribed study.

Major in International Business: The concentration in international business consists of appropriate courses in the fields of marketing, economics, finance, geography, political science, history, anthropology, and sociology. Courses from some, but not necessarily all, these areas are to be selected with the guidance and approval of the department chairman.

Bachelor of Science in Business Degree
College of Business and Administration

General Education Requirement	38
Professional Business Core	75
BUS 101, 102; 301, 302, 303, 350, 481, 482	24
MTH 130, 158, 164	9
ACC 201, 202, 203	9

EC 201, 202, 203, 301	12
ENG 331	3
FIN 301, 302	6
MGT 301, 302	6
MKT 301, 302	6
Requirements for Business Major	7
Major Field Requirements	66
required courses (see department for specific course requirements), professional electives, nonprofessional electives	
Total	186

Anthropology

The program of study for each anthropology major will be worked out by the student and his adviser. The normal course of study leads toward a Bachelor of Arts degree in anthropology. Normally, students working toward a bachelor's degree are encouraged to prepare themselves for graduate work in well-known schools. A student has the option of concentrating on various area studies such as South Asian, African, and North American cultures. He may also elect archaeology or physical anthropology as his special area of interest.

A student's overall progress in his studies is reviewed at the end of each year, or as may be necessary in order to see that the requirements of the department are being met and that the student's best interests are being served.

Students who are planning to major in anthropology should take ANTH 140, 141, and 142 in sequence. Nonmajors may enter the sequence at any time, but are advised to start with 140.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirement	47
Departmental Unit	36
Anthropology 140, 141, 142, 448	12
Anthropology electives	24
Related Courses	24
Biology, economics, geography, geology, history, political science, psychology, or sociology	
Language Requirement	12
One year of a foreign language	
Electives	64
Total	183

Art

The Department of Art offers studio and lecture courses in

art with a major in painting. The program of the department is designed to combine a general education in the major fields of human knowledge with specific studies in the field of fine arts. While a student undertaking a major in the department will have less time to devote to specific fine arts studies than the student in a vocational art school, he will gain a broader education and with it he should become more capable of critical analysis and self-direction, more articulate and understanding. The program is designed to provide a foundation for careers in teaching and professional work in art.

Bachelor of Fine Arts
College of Liberal Arts

General Education Requirement	48
Departmental Unit	102
ART 101, 102, 103, 141, 142	18
ART 221, 222, 223	15
ART 251, 261, 311-12-13	17
Art history (300-400 level)	12
Art electives	40
Electives	33
Total	183

Art-Education

The art education major prepares students to teach art in the elementary and secondary school.

Because of the sequential character and prerequisites in both the professional and academic components of education programs, the student is strongly advised to consult an adviser before registering.

Bachelor of Science in Education Degree
College of Education

Professional Education Requirements		33-36
ED 202, 203 (1 course Area 3A)	6	
ED 422, 429	15-18	
ED 440, 464	8	
AED 330	4	
Related Requirements		15
PSY 111, 112 (2 courses, Area 3A)	6	
Mathematics*	3	
SPC 135	3	
Art Education Major Requirements		83
ART 101, 102, 103, 221	17	
AED 114, 223, 224, 226 or 427, 332, 411, 331 or 431, 432, 441	30	
Art History	9	
AED — 1 course in Metals	3	

*May be waived with proficiency examination.

AED — 2 courses in fabrics	6	
AED electives	18	
Additional General Education Requirements		38
Area One	8	
Area Two	12	
Area Three A or B	9	
Area Three B	9	
Electives		27-30
Total		192

ART EDUCATION AS A SECOND TEACHING FIELD

Forty-five credit hours are required for art education as a second teaching field. Required: Art 101, 221; six hours of art history; AED 114, 223, 226, 332, 431, 441, 330; and one course in each of the following — fabrics, metal, and clay.

Biological Sciences

The Department of Biological Sciences offers an integrated undergraduate program leading to a Bachelor of Science degree or a Bachelor of Arts degree in biology. Specific student programs are planned in consultation with a department adviser. The large number of elective credits allows the student to construct a course of study in keeping with his individual interests and objectives. Students who plan to do graduate work in biology may find it advantageous to acquire proficiency in a modern language.

An honors program is available which enables qualified students to carry out an independent project under the guidance of a faculty sponsor. Students who have maintained a cumulative average of 3.0 during the preceding three quarters may petition the Department of Biological Sciences to pursue an honors program. Students should apply for admission to the program during the winter quarter of their junior year. Further information concerning this program is available from the biological sciences department office.

NOTE: Because the order in which science courses are taken is so important, students should adhere closely to the following schedule (bearing in mind that all individual programs are to be planned in consultation with an adviser.) *Freshman Year:* Freshman English, BIO 111, 112, 114; CHM 111, 121, 141. *Sophomore Year:* BIO 210 through 215; CHM 211, 212, 213. *Junior Year:* BIO 310 through 316; CHM 312; Physics. *Senior Year:* BIO 492.

Results of the mathematics placement examination will be used to determine the proper initial mathematics course; see mathematics course listings.

Bachelor of Science Degree
College of Science and Engineering

General Education Requirement		
(waive Area Two)		35
Departmental Unit (see Note, above)		49
BIO 111, 112, 114	12	
BIO 210, 211, 212, 213, 214, 215	15	
BIO 310, 311, 312, 313, 314, 315, 316	19	
BIO 492	3	
Required Supporting Courses (see Note, above)		60-67
CHM 111, 121, 141; or 101, 111, 141 (121 optional)	12-16	
CHM 211, 212, 213; 312	21	
PHY 240, 241, 242; or 270, 271, 272, 273; or 111, 112, 113	12-15	
MTH 132, 133, 231 or 132, 133, and 360 or equivalent	14-15	
Electives		32-39
Total		183

Bachelor of Arts Degree
College of Science and Engineering

General Education requirements, Departmental Unit, and Required Supporting Courses are the same as those for the Bachelor of Science degree above. See Science and Engineering College Requirements for the Bachelor of Arts degree.

Biological Sciences — Medical Technology

This degree program is achieved by the satisfactory completion of three years of study at Wright State University and a one-year internship in a clinical laboratory approved by the American Society of Clinical Pathologists, the Board of Schools of Medical Technology of the Council of Medical Education of the American Medical Association. Affiliated intern programs are available at Kettering Memorial, Miami Valley, Springfield Community, and Saint Elizabeth Hospitals. Internship programs in other ASCP approved laboratories are available with departmental consent.

To qualify for the degree, students must complete the general requirements for the Bachelor of Science degree as prescribed by the College of Science and Engineering, and an approved medical technology internship program. The internship program credits are applicable to the advanced credit and total credit requirements of the division. Acceptance into an internship program is determined by the affiliated school of medical technology. Students are eligible to apply for admission to an internship program after completion of the prescribed program of study at Wright State.

NOTE: In a program such as this, the sequence in which courses are taken is of extreme importance; the following schedule should be followed closely and all individual pro-

grams should be planned with an adviser. *Freshman Year:* Freshman English and 100-level biology and chemistry courses; mathematics. (Results of the mathematics placement examination will be used to determine the proper initial mathematics course; see mathematics course listings.) *Sophomore Year:* 200-level biology and chemistry courses, mathematics or general education courses. *Junior Year:* 300- and 400-level biology courses, CHM 312, PHY 111-113, and general education electives. *Senior Year:* Hospital Internship Program.

Bachelor of Science Degree
College of Science and Engineering

General Education Requirement (waive Area Two)		35
Departmental Requirements (see Note, above)		41
BIO 111, 112, 114	12	
BIO 210, 211, 212, 213, 214, 215	15	
BIO 310, 311, 312, 313, 426	14	
Related Course Requirements (see Note, above)		54-63
CHM 111, 121, 141; or 101, 102, 109	12-15	
CHM 211, 212, 213; 312	21	
PHY 111, 112, 113	12	
Mathematics	9-15	
Hospital Internship Program		48-52
Electives		0-5
Total		183

Biological Sciences-Education

The biological science education program prepares students to teach biology, chemistry, and general science. The concentration in biology provides greater depth in that area by encompassing all of the departmental core courses, including cell biology, genetics, microbiology, developmental biology, animal biology, and plant biology. The program also includes basic and supporting courses in chemistry and physics, related course work in mathematics and/or other areas of science, as well as the professional education courses required of all candidates for secondary school certification.

Because of the sequential character and prerequisites in both the professional and academic components of the program, the student is strongly advised to consult an adviser before registering.

Bachelor of Science in Education Degree
College of Education

Professional Education Requirements		32-35
ED 202, 203 (Gen. Ed., Area Three — 1 course)	6	

ED 431	3	
ED 422, 429	15-18	
ED 440, 464	8	
Related Requirements		15
PSY 111, 112 (Gen. Ed., Area Three — 2 courses)	6	
Mathematics*	3	
SPC 135, 136	6	
Biology Concentration Requirements		101
BIO 111, 112, 114 (Gen. Ed., Area Two)	12	
BIO 210 through 215	15	
BIO 310 through 316	19	
CHM 111, 121, 131, 141; 211, 212, 213	31	
PHY 111, 112, 113	12	
GL 101, 102, 103	12	
Additional General Education Requirements		26
Area One	8	
Area Three A or B	9	
Area Three B	9	
Electives		15-17
Total		192

BIOLOGICAL SCIENCE-EDUCATION AS A SECOND TEACHING FIELD

Thirty credit hours in biology are required for biological sciences as a second teaching field. Required courses are BIO 111, 112, 114; 210, 211, 212, 213, 214, 215 and advised elective.

Business-Economics

The business economics major will take a minimum of 42 credit hours in economics in addition to the basic business core required of all candidates for the Bachelor of Science degree in the College of Business and Administration. Freshmen in this program are encouraged to take EC 103, Evolution of American Industrial Society. Beyond the basic economics courses there is a sub-major requirement consisting of a three-course sequence (9-11 hours) in one of the following areas of concentration: economic development, economic history, general economics, international economics, labor economics, monetary economics, public finance and taxation, and quantitative economics.

Bachelor of Science in Business Degree
College of Business and Administration

General Education Requirement		38
Professional Business Core		72
BUS 101, 102, 301, 302, 303, 350, 481, 482	24	
MTH 130, 158, 164	9	
ACC 201, 202, 203	9	
EC 201, 202, 203	9	
ENG 331	3	

FIN 301, 302	6
MGT 301, 302	6
MKT 301, 302	6
Requirements for Business Economics Major	22-24
EC 315, 316, 317	12
Economics electives	10-12
Area of Concentration	9-11
Economic Development	11
EC 441; 444; 447 or 448	
Economic History	10
EC 321, 353, 493	
General Economics	11
upper division economics electives	
International Economics	11
EC 441, 442, 495	
Labor Economics	11
EC 351, 454, 496	
Monetary Economics	9
EC 301, 402, 491	
Public Finance and Taxation	11
EC 431, 432, 494	
Quantitative Economics	11
EC 409, 410, 492	
Electives	43
Total	186

Business-Education

Business Education offers two majors which lead to the Bachelor of Science in Education degree and to state certification. The *Comprehensive* major leads to certification in all areas of secondary business education. These areas include shorthand, typewriting, bookkeeping, general business, business law, economics, salesmanship, and other commonly taught business education subjects. The *Basic Business* major includes all the content areas in the comprehensive program except stenography.

NOTE: Because of the sequential character and prerequisites in both the professional and academic components of many education programs, the student is strongly advised to consult an adviser before registering.

Bachelor of Science in Education Degree
College of Education

BUSINESS EDUCATION COMPREHENSIVE WITH SHORTHAND

Professional Education Requirements	36-39
ED 202, 203 (Gen. Ed., Area Three — 1 course)	6
ED 433, 434, 435, 436, 437, 438	7
ED 422, 429	15-18
ED 440, 464	8

Related Requirements		12
PSY 111, 112 (Gen. Ed. Area 3, 2 courses)	6	
SPC 135, 136	6	
Comprehensive Business Major Requirements		73
ACC 103, 201, 202, 203	12	
BUS 101, 102, 103, 350, 351, 352	18	
EC 201, 202, 203 (Gen. Ed., Area Three)	9	
ENG 331	3	
MTH 127; MKT 301, 336, and 441 or 461	12	
OA 202, 203, 212, 213, 301, 305, 405, 411	19	
Additional General Education Requirements		29
Area One	8	
Area Two	12	
Area Three B	9	
Electives (second field suggested)		35-38
Total		192

BUSINESS EDUCATION COMPREHENSIVE WITHOUT SHORTHAND

Professional Education Requirements		35-38
ED 202, 203 (Gen. Ed., Area Three — 1 course)	6	
ED 433, 434, 436, 437, 438	6	
ED 422, 429	15-18	
ED 440, 464	8	
Related Requirements		12
PSY 111, 112 (Gen. Ed., Area Three)	6	
SPC 135, 136	6	
Basic Business Major Requirements		69
ACC 103, 201, 202, 203	12	
BUS 101, 102, 103, 350, 351, 352	18	
EC 201, 202, 203 (Gen. Ed., Area Three)	9	
ENG 331	3	
MKT 301, 336, 441, 461; MTH 127	15	
OA 212, 213, 305	6	
Electives chosen from accountancy, business, economics, marketing, or office administration	6	
Additional General Education Requirements		29
Area One	8	
Area Two	12	
Area Three B	9	
Electives (second field suggested.		39-42
Total		192

Business Science

See Administrative Sciences and Finance.

Chemistry

The Department of Chemistry offers programs leading to the Bachelor of Arts, Bachelor of Science, and Master of Science degrees for students majoring in chemistry. The Bachelor of Science in Education degree is also available

with a concentration in chemistry; see the science comprehensive program later in this chapter. The Bachelor of Arts and Bachelor of Science curricula are designed to prepare the undergraduate student for careers as professional chemists, entrance into professional schools, or graduate work in chemistry. Both programs are flexible and permit the options of heavy concentration in chemistry courses or a combination of a chemistry major with extensive course work in allied (other sciences) or non-allied (business, arts, etc.) areas. In order to develop an academic program to suit specific needs and individual interests, the student is advised to consult with his academic adviser.

The Candidate for the Bachelor of Science degree with a major in chemistry is required to complete the chemistry, mathematics, and physics course sequences in the program outlined below with the following exceptions: Special Problems in Chemistry (CHM 499) is not required, but it is expected that the serious chemistry major will complete at least four quarter hours of this research course during the senior year. Chemical Literature (CHM 319) is strongly recommended but not required. Mathematics 232, which completes the four-part calculus sequence, is also recommended because of its applications in physical and inorganic chemistry courses. Although there is no foreign language requirement, two years of study in German, French, or Russian, or one year of each of two of these languages, is strongly recommended. In addition, students are required to fulfill the university and college degree requirements as prescribed earlier in this chapter.

NOTE: Because the order in which science courses are taken is so important, students are advised to adhere closely to the following schedule (bearing in mind that all individual programs are to be planned in consultation with an adviser.) *Freshman Year:* Freshman English, CHM 111, 121, 131, 141; MTH 132, 133, 231. *Sophomore Year:* CHM 211, 212, 213; PHY 240, 241, 242. *Junior Year:* CHM 311, 312, 313, 451, 452, 453; 319. *Senior Year:* CHM 420, 421, 455.

Bachelor of Science Degree
College of Science and Engineering

General Education Requirement		
(waive Area Two)		35
Departmental Requirements (see Note, above)		66-71
CHM 111, 121, 131, 141; 211, 212, 213	31	
CHM 311, 312, 313; 451, 452, 453	27	
CHM 420, 421, 455	8	
Recommended: CHM 319, 499	(5)	
Related Course Requirements		30-35
MTH 132, 133, 231	15	

PHY 240, 241, 242	15	
Additional mathematics (recommended)	(5)	
Electives		42-52
Recommended: 21 hours of foreign language		
Total		183

The Candidate for the Bachelor of Arts degree with a major in chemistry is required to complete the chemistry, mathematics, and physics course sequences in the program outlined below. Additional requirements include twelve credit hours of science electives and two years of foreign language study. The science elective requirement may be satisfied with any course sequence in the College of Science and Engineering including additional chemistry courses or individual research projects (CHM 499). The foreign language requirement may be satisfied with two years of study in any foreign language or one year of each of two languages.

In keeping with the philosophy that the Bachelor of Arts degree candidate with a chemistry major (although scientifically oriented) is quite broad in interest and experience, it is required that the student earn twenty-seven credit hours in courses (18 of which must be 200-level or above) outside the College of Science and Engineering. This requirement may not be satisfied with courses which are used to fulfill foreign language or university General Education requirements. In order to insure a reasonably high level of exposure in some area it is further required that the student complete at least thirty credit hours in 300-level (or higher) courses applicable to the degree.

Bachelor of Arts Degree
College of Science and Engineering

General Education Requirement		
(waive Area Two)		35
Department Requirement		48
CHM 111, 121, 131, 141; 211, 212, 213	31	
CHM 312; 451, 452, 453; 455	17	
Related Course Requirements		39-42
MTH 132, 133, 231	15	
PHY 240, 241, 242; or 111, 112, 113	12-15	
Science electives	12	
Foreign Language Requirement		21
Additional Courses outside Science and Engineering		
(18 above 200-level)		27
Electives		10-13
Total		183

Chemistry-Education

The chemistry-education program prepares students to

teach chemistry and general science in the secondary school. The concentration in chemistry provides a strong preparation in that science with courses in general, organic, analytical, and physical chemistry. The program also includes basic and supporting courses in biology, physics, and earth science as well as the professional education courses required of all candidates for secondary school certification. Students are strongly advised to complete at least one second teaching field in biological sciences or earth science or physics in addition to the basic program in chemistry.

Because of the sequential character of and prerequisites in both the professional and academic components of the program, the student is strongly advised to consult an adviser before registering.

Bachelor of Science in Education Degree
College of Education

Professional Education Requirements		32-35
ED 202, 203 (Gen. Ed., Area Three — 1 course)	6	
ED 431	3	
ED 422, 429	15-18	
ED 440, 464	8	
Related Requirements		15
PSY 111, 112 (Gen. Ed., Area Three — 2 courses)	6	
Mathematics*	3	
SPC 135, 136	6	
Chemistry Concentration Requirements		75
CHM 111, 121, 131, 141	16	
CHM 211, 212, 213; 312	21	
CHM 451, 452, 453, 455	11	
BIO 111, 112, 114	12	
GL 101, 102, 103	12	
PHY 240, 241, 242	15	
Additional General Education Requirements		26
Area One	8	
Area Three A or B	9	
Area Three B	9	
Electives		41-44
Total		192

CHEMISTRY-EDUCATION AS A SECOND TEACHING FIELD

Thirty-one credit hours are required for chemistry as a second teaching field. Required courses are CHM 111, 121, 131, 141, 211, 212, and 213.

Classical Humanities

Classical Humanities is the study of the beginnings and growth of a distinct Western cultural tradition in ancient Greece and Rome. The examination of Greco-Roman cul-

*May be waived with proficiency examination.

ture, its philosophy, poetry, drama, and history offers the student an understanding of the unique spirit of Western civilization. It is the study of themes and imperatives whose tap roots run 2500 years deep into human history, yet which are the source of much contemporary Western thought and tradition.

Through a comparison of the Greek and Latin languages and cultures with contemporary Western languages and culture, the student gains not only an appreciation of the classical tradition, but also a broad knowledge of Western civilization as a continuously evolving yet unified whole.

The flexibility of the classical humanities program allows the student to concentrate in particular areas of his own interest, such as comparative literature, aesthetics, linguistics, classical and contemporary criticism, and history. Students will be prepared for further work in modern languages, art, literature, law, or philosophy.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirement	47
Departmental Unit	48
Latin or Greek (the 203 level must be reached in at least one language)	24
Classical humanities electives	24
Related courses	24
Art, history, language, literature, philosophy, or religion electives	24
Electives	64
Total	183

Computer Science

The growth of computing and data processing systems is one of the striking phenomena of our times. Government is rapidly reorganizing its endeavors in accordance with the requirements of the computer, the structure of business organization is being radically modified by the computer, and scientific research is increasingly dependent upon computers. It is hardly too much to say that the space age would have been impossible without the contributions of the computer and that in large areas of natural science, social science, business, and medicine significant research in the future will be impossible without a working knowledge of computers, processing of data, and analysis of systems.

The objective of the degree program in computer science is to prepare an individual for a career in computing through a course of study which includes a thorough founding in the

science and mathematics needed to understand computers and computing, considerable work on computers and computing, as such, and development of a strong second area of concentration in a related field or in a field of application. The recommended curricula for two of the most commonly chosen second fields, engineering and business, are listed below.

Note: Because the order in which science courses are taken is so important, students should adhere closely to the following schedule (bearing in mind that all individual programs are to be planned in consultation with an adviser). *Freshman Year:* Freshman English; MTH 132, 133, 231; CS 151, 152, 153. *Sophomore Year:* CS 252, 253; MTH 232, 233, 355; PHY 240, 241, 242. *Junior Year:* CS 351, 352, 353, 316, 317; MTH 360; EGR 321, 327, 341. *Senior Year:* EGR 450, 442; MTH 461.

Bachelor of Science Degree
College of Science and Engineering

General Education Requirement	35
Major Field Requirements	117
Computer Science Requirements	48
CS 151, 152, 153, 252, 253	18
CS 316, 317, 351, 352, 353	18
CS electives (300-level or higher)	12
Mathematics Requirements	36
MTH 132, 133, 231, 232, 233	25
MTH 355, 360, 461	11
Engineering Requirements	18
EGR 321, 327, 341	12
EGR 442, 450	6
Physics Requirements	15
PHY 240, 241, 242	15
Electives	31
Total	183

Engineering Concentration

Electives must include EGR 322 and 441 and at least three courses selected from EGR 421, 425, 426, 432, 433, 444, and 449.

Business Concentration

EC 201, 202, 203 should be taken during the freshman year as part of the General Education Requirement.

Electives should be chosen from among the following: BUS 103, 401; ACC 201, 202, 203; MGT 301, 302; FIN 301, 302; MKT 301, 302; ENG 331.

Earth Science-Education

The earth science program prepares students to teach earth science and general science in the secondary school. The

concentration in earth science provides intensive preparation in that area with courses in mineralogy, structural geology, and invertebrate paleontology. The program also includes basic and supporting courses in biology, chemistry, and physics; related course work in geography; and the professional education courses required of all candidates for secondary school certification. Students are strongly advised to complete at least one second teaching field in biology or chemistry or physics in addition to the basic program in earth science.

Because of the sequential character and prerequisites in both the professional and academic components of the program, the student is strongly advised to consult an adviser before registering.

Bachelor of Science in Education Degree
College of Education

Professional Education Requirements		32-35
ED 202, 203 (Gen Ed., Area Three — 1 course)	6	
ED 431	3	
ED 422, 429	15-18	
ED 440, 464	8	
Related Requirements		15
PSY 111, 112 (Gen. Ed., Area Three — 2 courses)	6	
Mathematics*	3	
SPC 135, 136	6	
Earth Science Concentration Requirements		84
GL 101, 102, 103 (Gen. Ed., Area Two)	12	
GL 203, 311, 430, 431, 433	19	
GEO 101, 102, 434 (Gen. Ed., Area Three — 3 courses)	9	
BIO 111, 112, 114	12	
CHM 111, 121, 131, 141	16	
PHY 111, 112, 113, 123	16	
Additional General Education Electives		17
Area One	8	
Area Three B	9	
Electives		44-47
Total		192

EARTH SCIENCE AS A SECOND TEACHING FIELD

Thirty credit hours minimum are required for earth science as a second teaching field. Required courses are GL 101, 102, 103, 203, 430, 431; GEO 101, 434; and advised electives to complete the minimum of 30 credit hours in earth science.

Economics

Candidates for a Bachelor of Arts degree with a major in

*May be waived with proficiency examination.

economics are required to take 42 credit hours in the Department of Economics. Basic courses are supplemented by economics electives and by a sub-major consisting of a three-course sequence (9-11 hours) in one of the following areas of concentration: economic development, economic history, general economics, international economics, labor economics, monetary economics, public finance and taxation, and quantitative economics. For specific course requirements in each of these sub-majors, see the program for business economics. Freshmen in this program are encouraged to take EC 103, Evolution of American Industrial Society.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirement (waive 9 hrs. of Area Three)		39
Departmental Unit		42
EC 201, 202, 203	9	
EC 315, 316, 317	12	
Sub-major requirement (see Business Economics)	9-11	
Economics electives	10-12	
Related Courses		27-30
MTH 130, 158, 164 (more advanced mathematics courses may be substituted)	9	
BUS 301, 302, 303	9	
Three upper-division courses in political science, philosophy, English, psychology, sociology, geography, or history	9-12	
Electives		72-75
Total		183

Economics-Education

Economics-education may be chosen as a second teaching field only. (See Social Studies Education for the major teaching field requirements in this area.) To be recommended for Ohio Provisional Certification in this teaching field, a student must also have completed the program of a related major teaching field. Forty-five credit hours are required, including thirty credit hours in economics and fifteen hours in other social sciences.

Educational Media (Library Science-Education)

Candidates for the Bachelor of Science in Education degree may elect library science-education as a second teaching field only. Thirty credit hours are required, including LCS 311, 312, 313, 413, 435, 449, 482 and ED 420.

Elementary Education

For graduation with the Bachelor of Science in Education degree with certification in elementary education, the minimum requirement is 192 credit hours (which may include three hours of college service physical education). Of the 192 hours, a minimum of 44 hours of professional education (all courses listed as Education *except* ED 201, 241, 242, 243, 416, and 426) and 135 credit hours of general education is required for the degree and recommendation for Ohio certification in elementary education.

Students are encouraged to carefully select electives in order to develop an area of concentration (e.g. math-science, social studies, language arts, music, art, health education, physical education, reading, or educational media).

A standard elementary certificate may be validated for teaching the following areas in the elementary school: art, music, educational media, kindergarten, and physical education. An adviser can help the student select the appropriate course work to be eligible for one of these fields.

Bachelor of Science in Education Degree
College of Education

Professional Education Requirements		45-48
ED 202, 203	6	
ED 315*, 316*, 317*, 318*, 417	16	
ED 419 and 422	15-18	
ED 403, 440	8	
Related Course Requirements (includes General Education Requirement)		112
AED 231, 331	6	
BIO 111, 112, 114 (Gen. Ed., Area Two); 301	17	
ED 241, 242, 243	12	
ENG 111, 112 (Gen. Ed., Area One); 342, 497	16	
MTH 141, 142	8	
MUS 165, 265, 365	9	
PE 281	3	
PSY 111, 112	6	
SPC 125, 126	6	
Social Studies (Gen. Ed., Area Three A — 6 courses)	30	
GEO 101, 102, 103	9	
HST 121, 122, 123	9	
HST 111, 112, 113 or PLS 111, 112, 113	9	
Elective	3	
Additional General Education Requirements		9
Area Three B — 3 courses	9	
Electives (9-12 hours may be professional electives)		23-26
Total		192

*Participation experience required.

Elementary and Mentally Retarded Education

The basic program for elementary and mentally retarded education is similar to that for elementary education in the requirements for general education courses. In addition to the courses required for the elementary education program are professional courses which given an in-depth study of the problems particular to the teaching of exceptional children, including curriculum development, skill subjects, materials, and occupational training for slow learners.

Students who elect to follow this program will be prepared for careers in a challenging and rewarding field of teaching in which there is a great demand for qualified personnel.

Bachelor of Science in Education Degree
College of Education

Professional Education Requirements		60-63
ED 202, 203	6	
ED 315*, 316*, 317*, 318*, 417	16	
ED 441, 442*, 443*, 445, 455	15	
ED 419 and 422	15-18	
ED 403, 440	8	
Related Course Requirements		113
(includes General Education Requirement)		
AED 231, 331	6	
BIO 111, 112, 114 (Gen. Ed., Area Two); 301	17	
ED 241, 242, 243	12	
ENG 111, 112, (Gen. Ed., Area One); 342, 497	16	
MTH 141, 142	8	
MUS 165, 265, 365	9	
PE 281	3	
PSY 111, 112	6	
SPC 125, 126	6	
Social Studies (Gen. Ed., Area Three A — 6 courses)	30	
GEO 101, 102, 103	9	
HST 121, 122, 123	9	
HST 111, 112, 113 or PLS 111, 112, 113	9	
Elective	3	
Additional General Education Requirements		9
Area Three B — 3 courses	9	
Electives		6-9
Total		192

MENTALLY RETARDED (SLOW LEARNER) EDUCATION

This program is identical to the one above with the exception of the professional education requirements. The following sequence should be taken and the number of elective hours will accordingly be increased by thirteen.

*Participation experience required.

Professional Education Requirements	47-50
ED 202, 203	6
ED 441, 442*, 443*, 444*, 445, 455	18
ED 419 and 422	15-18
ED 403, 440	8

Engineering

The Department of Engineering offers programs leading to the Bachelor of Science degree in engineering physics or systems engineering.

Engineering Physics

The engineering physics program, an interdisciplinary program offered jointly by the Departments of Engineering and Physics, is administered by the Department of Engineering. The program contains a core of engineering science, mathematics, and physics courses. This prepares a student for conceptual design, research, and development work in industry or graduate school. Graduate education may consist of engineering, physics, or a combination of the two.

The engineering physics program differs from the systems engineering program in that while much of the subject material is the same, more of it is taught in the physics department where it receives a more generalized and theoretical treatment. The courses which the engineering physics major must take are outlined in the program below. For all engineering majors, a technical elective is defined as any course of 200 or higher level which is given either by the College of Science and Engineering or by the College of Business and Administration.

Note: The order in which technical courses are taken is very important, so students should adhere closely to the following schedule. Also because of the various options that are open to a student, he should consult one of the two Engineering Physics advisers to get advice on the options available to him. *Freshman Year:* English 111, 112; MTH 132, 133, 231; CHM[1]; EGR 141, 142, 143, 144. *Sophomore Year:* MTH 232, 233, 355; PHY 240, 241, 242; EGR 212; CS 210. *Junior Year:* PHY 230, 350, 351, 352, 371, 372; MTH 333; EGR 321, 322, 341, 415[2]. *Senior Year:* PHY 460[3], 461, 314; EGR 421, 425, 426, 490, 491; 20 hours of technical electives.[4]

[1] A student must take two courses from CHM 111, 121, 131 and 141. If he has not had one year of high school chemistry, he must also take CHM 101.

[2] A student may elect to take PHY 420-3 instead of EGR 315-4.

[3] A student must select either PHY 460 and 461 or PHY 300 and 301.

[4] From the following four courses an EGR-PHY student must select three courses for partial fulfillment of his technical elective requirement: EGR 441, PHY 322, EGR 317, EGR 316.

[5] Because a student has a choice in Thermodynamics and technical electives, an individual's program may vary from the 192 hour total required.

Bachelor of Science Degree
College of Science and Engineering

MAJOR IN ENGINEERING PHYSICS

General Education Requirement (waive Area Two)	35
Department Unit (see note above)	95
EGR 141, 142, 143, 144, 212, 321, 322	23
EGR 315, 341, 421, 425, 426, 490, 491	29
PHY 240, 241, 242, 230, 350, 351, 352	29
PHY 371, 372, 460, 461, 314	14
Related Course Requirements (see Note above)	42
MTH 132, 133, 231, 232, 233, 333, 355	31
CHM 111, 121	8
CS 210	3
Technical Electives	20
Total	192[5]

Systems Engineering

Systems engineering is an evolving discipline which has not arrived at a single accepted definition. Definitions may be based on the area of activity, on the level of complexity of the problems, or on the method of approach to the problems.

Wright State's systems engineering program is directed toward the design and analysis of physical systems. This includes the design of machines, information handling systems, control systems, and other large scale facilities.

Systems engineering is often applied to the activity of management systems. Management systems is devoted to the optimum selection, specification, and use of organizations, processes, inventory, materials, and economic resources to accomplish a defined task. It involves following the project from initial definition through distribution and servicing. Some engineers in this work will be concerned with the physical systems, meeting specifications, planning modifications, etc; other management systems engineers will be concerned with scheduling, organization, and economics. The Wright State program is directed toward the design of physical systems, but many techniques are common to both physical and management systems; by the selection of his electives from the fields of business and management, the student is able to prepare for a career in management systems.

The term "systems" is applied at many levels. It can be applied to the ignition system in a car, to the entire automobile, or to the transportation and traffic system for a region or country. In the Wright State program the engineering of larger scale systems is the primary objective, but the knowledge and techniques are applicable to smaller

systems as well, where most practical applications exist today.

The systems engineer seeks the optimum solution to a problem. He combines good engineering practice with the application of the techniques available to today's engineers: digital and analog computers; modeling; simulation; analogies; optimization and decision theories; principles from other fields, such as feedback; mathematical techniques, such as numerical analysis and matrix algebra; and human factors engineering. While it is not generally possible to apply this in its entirety to large scale systems, progress is being made toward this goal; meanwhile the techniques are being applied to subsystems of the entire system, and to systems which have been simplified by approximations.

In another approach to systems engineering, engineers enumerate all possible solutions, do a preliminary design analysis of each, compare, and choose the one that best meets the requirements. Then a final design is produced. While this approach is not emphasized at Wright State, the student is well prepared to participate in such a systems effort by the interdisciplinary character of his courses and the emphasis on mathematics and use of computers.

Many companies are including systems engineering groups in their organizational structure. There is a growing demand for engineers with this systems capability. However, whether positions labeled "Systems Engineer" are part of a company's organization or not, a Wright State graduate is quite likely to be filling a position which would normally be filled by a mechanical engineer, electrical engineer, or another traditionally trained engineer.

The student's interdisciplinary background and his strength in mathematics permit him to take on an electrical, mechanical, or other engineering problem with good comprehension and a minimum of additional study. Further, this interdisciplinary foundation leads to an understanding and an appreciation of the interactions of his particular task with other parts of the overall project. As a result, his contribution is likely to be more valuable to the entire project than the contribution which could have been made by an engineer with an equivalent education in a traditional engineering field.

The systems engineer is particularly well prepared for problems that involve dynamics or control analysis or design, whether these be in electrical, mechanical, chemical, aerospace, or other engineering fields. As the problems and systems become larger, he has the mathematical and engineering tools for tackling them.

The courses which the systems engineering student must

take are given below. The technical electives permit specialization within the systems engineering program. For all engineering programs, a technical elective is defined as any course of 200 or higher level given by the College of Science and Engineering or by the College of Business and Administration.

NOTE: Because the order in which science courses are taken is so important, students should adhere closely to the following schedule (bearing in mind that all individual programs are to be planned in consultation with an adviser.) *Freshman Year:* Freshman English, MTH 132, 133, 231; CHM courses; EGR 141, 142, 143, 144. *Sophomore Year:* MTH 232, 233, 355; PHY 240, 241, 242; CS 210; EGR 212, 213. *Junior Year:* MTH 332, 333; EGR 321, 322, 341, 313, 315, 316, 345. *Senior Year:* EGR 421, 423, 425, 426, 430, 441, 490, 491.

Bachelor of Science Degree
College of Science and Engineering

MAJOR IN SYSTEMS ENGINEERING

General Education Requirement (waive Area Two)	35
Departmental Unit (see Note, above)	82
EGR 141, 142, 143, 144; 212, 213	18
EGR 313, 315, 316; 321, 322, 341	26
EGR 345, 421, 423, 425, 426, 430, 441, 490, 491	38
Related Course Requirements (see Note, above)	60-64
MTH 132, 133, 231; 232, 233, 355	28
MTH 333, 332	6
CS 210	3
CHM 101, 111, 121, 131, 141 (2 or 3 courses as specified by the department)	8-12
PHY 240, 241, 242	15
Technical Electives	15
Total	192-196

English

The English major is designed to provide a balanced program of elementary and advanced work in English and American literature, English language and linguistics, and writing. The program offers the opportunity for systematic study of a major humanistic discipline, as well as sound professional training suitable for those planning high school teaching careers or contemplating graduate work.

In selecting related courses and electives, students should try whenever possible to choose, in consultation with a departmental adviser, courses that will supplement or complement their major interest and that will form a coherent unit

of study. English majors are also required to have two years of foreign language study. This requirement may be satisfied by completing the second-year course or by equivalent examination.

Candidates for secondary certification must take the professional education courses indicated in the program for English Education which follows. At the beginning of the junior year, all English majors seeking certification should review their programs with a Record Analyst in the College of Education to ensure fulfillment of the necessary requirements for certification.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirement	48
English Major Requirements	56
ENG 250, 251	8
ENG 360 and 480	8
ENG 351 or 352; 353 or 354; 355 or 356; plus one other course from this group	16
At least three of the following, each from a different category:	
ENG 410, 420, 430, 440, 450, 460, 470	12
One course in composition or creative writing	4
Two or more courses on the 300 and/or 400 level	8
Related Course Requirements	24
HST 321, 322, 323; or HST 444, 445, 446	9
Electives from department-approved list	15
Language Requirement	24
Electives	31
Total	183

English-Education

The Bachelor of Science in Education program with a major in English is intended *only* for those seeking secondary certification. Departmental requirements are similar to those for the Bachelor of Arts program in English, but collegiate requirements differ. Advisers will be assigned in the College of Education; however, all English majors are welcome to consult the Department of English concerning the major program. It is suggested that students elect the course sequence either in American history (HST 444, 445, 456) or in English history (HST 321, 322, 323), depending on the student's major interest. Students are advised to consult the department for a list of the 400-level courses that will be offered during a given academic year; these courses are open only to students who have completed twelve hours of 300-level courses.

Because of the sequential character and prerequisites in both the professional and the academic components of education programs, the student is strongly advised to consult an adviser before registering.

Bachelor of Science in Education Degree
College of Education

Professional Education Requirements		35-38
ED 202, 203 (Gen. Ed., Area Three — 1 course)	6	
ED 332	3	
ED 432	3	
ED 422, 429	15-18	
ED 440, 464	8	
Related Requirements		15
PSY 111, 112 (Gen. Ed., Area Three — 2 courses)	6	
Mathematics*	3	
SPC 135, 136	6	
English Education Major Requirements		56
ENG 203	4	
ENG 250, 251	8	
ENG 341	4	
ENG 360 and 480	8	
ENG 351 or 352; 353 or 354; 355 or 356; and one other course from this group	16	
At least three of the following (each from a different category):		
ENG 410, 420, 430, 440, 450, 460, 470, 480	12	
Elective in composition or linguistics	4	
Additional General Education Requirements		38
ENG 111, 112	8	
Area Two	12	
Area Three A	9	
Area Three B	9	
Electives (second or supporting field suggested)		45-48
Recommended: HST 321, 322, 323; or 444, 445, 446		
Total		192

ENGLISH-EDUCATION AS A SECOND TEACHING FIELD

Forty-five credit hours are required, including ENG 111, 112, ENG 203, 250, 251, 341, 360, 480; ENG 351 or 352, 353 or 354, 355 or 356. One elective in literature, linguistics, or writing; and ED 432.

Finance

See Administrative Science and Finance

French

See Modern Languages

*May be waived with proficiency examination.

Geography

The Department of Geography aims to provide students with an understanding and sensitivity to the spatial organization and distribution of phenomena in the physical and human world. Geography has a broad interdisciplinary base ranging from the natural to the behavioral sciences. The geographer's interest in topics such as climatology, landform analysis, settlement theory, spatial interaction, and urban morphology all express the breadth of contemporary geography.

The geographer must take account of historical and cultural processes, including man's diverse attitudes toward the earth and how they have changed through time. He must take account of economic and social processes which influence such geographical conditions as industrial location, population distribution, urban spatial structure, settlement patterns, and the use of resources. The geographer must be able to employ the data of natural science, or be intimately concerned with the data of social science and the intelligence of philosophy.

The undergraduate major in geography therefore includes the study of cultural, economic, physical, and regional geography as well as cartography, quantitative methods, and field work. Backgrounds in the natural and social sciences, humanities, statistical methods, and computer programming are useful to the geography major.

Geography may be selected as an academic major or as a secondary teaching major in social science; as part of an earth science program or part of an elementary teaching major; geography courses also may satisfy both general education requirements and advanced course electives in many programs. Students majoring in geography may qualify for a secondary school teaching certificate by meeting the minimum requirements in professional education courses essential to certification by the State of Ohio. Students interested in this option should consult a Records Analyst in the College of Education for information concerning the minimum requirements.

The geography major may select a specialized area of study from a variety of curricula or choose a general geography curriculum. Each of the specialized curricula provides liberal course options which allow the geography major to adapt his total program to his particular interest and future plans. Because sequential requirements and prerequisites exist in both the professional and academic components of

each program, the student is strongly urged to consult an adviser before registering.

Bachelor of Arts Degree
College of Liberal Arts

MAJOR IN GENERAL GEOGRAPHY

General Education Requirement	47
Departmental Core Requirement	25
GEO 101, 102, 103	9
GEO 299, 365	10
One course in Advanced Systematic Geography	3
One course in Advanced Regional Geography	3
General Geography Major Requirement	20
GEO 201, 202, 271	9
GEO 302, 332	6
Select two additional geography courses from those numbered 300 and above	5
Related Course Requirement	24
Select a minimum of 24 credits from courses numbered 200 and above (not to exceed 12 hours in one department) offered in the following departments: BIO, CHM, CLS, EC, ENG, GL, HST, MTH, ML, PHL, PHY, PLS, PSY, REL, and SOC-ANTH.	
Communications Requirement	12
ML 111, 112, 113; or CLS 111, 112, 113	12
Electives	55
Select 55 credits from courses offered in the following departments: BIO, CHM, CLS, CS, EC, ENG, GL, HST, MTH, ML, PHL, PHY, PLS, PSY, REL, SPC, and SOC-ANTH.	
Total	183

Bachelor of Arts Degree
College of Liberal Arts

MAJOR IN URBAN-ECONOMIC GEOGRAPHY

General Education Requirement	47
Departmental Core Requirement	25
GEO 101, 102, 103	9
GEO 299, 365	10
One course in Advanced Systematic Geography	3
One course in Advanced Regional Geography	3
Urban-Economic Geography Major Requirement	20
GEO 271, 343, 354	9
GEO 450, 456, 458	9
One appropriate course in Advanced Systematic Geography	2
Related Course Requirement	24
CS 210	3
EC 201, 202, 203	9
MKT 301, 303	6
Select a minimum of 6 credits from: EC 315, 340, 360, 409, 410 PSY 321, 325, 385 SOC 220, 230, 300	6

Communications Requirement 12
ML 111, 112, 113; or CLS 111, 112, 113 12
Electives 55
Select 55 credits from:
ANTH 333, 440
BUS 303, 412
CS 211, 252, 253
EC 315, 340, 360, 409, 410
ED 315, 316, 340, 360, 409, 410, 444, 447, 448
HST 111, 112, 113, 203, 214, 215, 447, 448, 474, 475, 476
MKT 302, 421, 431, 451, 452, 461, 471
MTH 131, 132, 133, 231, 232
PLS 225, 250, 328, 360, 425
PSY 321, 325, 326, 385, 426
SOC 220, 230, 300, 425
Total 183

Bachelor of Arts Degree
College of Liberal Arts

MAJOR IN RESOURCE MANAGEMENT

General Education Requirement 47
Suggested Courses:
Area One
Eng 111, 112 8
Area Two
GL 101, 102, 103 12
Area Three
Group A
EC 201, 202, 203 9
SOC 111, 112, 220 9
Group B
Three courses 9
Departmental Core Requirement 25
GEO 101, 102, 103 9
GEO 299, 365 10
One course in Advanced Systematic Geography 3
One course in Advanced Regional Geography 3
Resource Management Major Requirement 20
GEO 271, 332 6
GEO 445, 456, 458 11
One appropriate course in Advanced Systematic Geography 3
Related Course Requirement 24
Select a minimum of 24 credits from:
BUS 350
CS 210, 211
EGR 300
HST 448, 476
LA 211
MKT 301
PLS 225, 425
REL 495
Communications Requirement 12
ML 111, 112, 113; or CLS 111, 112, 113 12

Electives 55

Select 55 credits from:

BIO 111, 112, 113	HST 448, 476
BUS 350	LA 211
CHM 410, 411, 412	MKT 301
CS 210, 211	PLS 111, 225, 425
EGR 300	PSY 111, 112
EVS 112, 113	REL 495
GL 201, 204, 210, 302	
350, 351, 440, 451	

Total 183

Bachelor of Arts Degree
College of Liberal Arts

MAJOR IN CULTURAL GEOGRAPHY

General Education Requirement 47

Suggested Courses:

Area One

ENG 111, 112 8

Area Two

GL 101, 102, 103 12

Area Three

Group A 18

SOC 121, 122, 123 and

PSY 111, 112 and one additional psych. course

Group B 9

PHL 111, 112, 113 or

REL 111, 112, 272

Departmental Core Requirement 25

GEO 101, 102, 103 9

GEO 299, 365 10

One course in Advanced Systematic Geography 3

One course in Advanced Regional Geography 3

Cultural Geography Major Requirement 20

GEO 302, 343, 391 9

GEO 458, 464 6

Two appropriate courses in Advanced Systematic Geography 5

Related Course Requirement 27

SOC 220, 230 or 333, 321, 406 12

PSY 325, 372 8

PHL 392 3

LI 471, 472 4

Communications Requirement 12

ML 111, 112, 113; or CLS 111, 112, 113 12

Electives 52

Select 24 credits from the following:

HST 120, 301, 302, 453, 454, 481, 482, 483

ML 201, 202, 203

PLS 122, 123, 204, 250, 332, 360 24

Select 28 credits in courses numbered 300 or above from the following departments:

ANTH, HST, ML, PHL, PLS, PSY, REL, SOC 28

Total 183

Bachelor of Arts Degree
College of Liberal Arts

MAJOR IN PHYSICAL GEOGRAPHY

General Education Requirement 47
Suggested Courses:
Area One
ENG 111, 112 8
Area Two
CHM 101, 111, 131 or
GL 101, 102, 103 12
Area Three
Group A. Six courses from two of the following departments:
ANTH, EC, HST, PLS, PSY, SOC 18
Group B. PHL 115 and two additional courses 9
Departmental Core Requirement 25
GEO 101, 102, 103 9
GEO 299, 365 10
One course in Advanced Systematic Geography and
One course in Advanced Regional Geography 6
Physical Geography Major Requirement 20
GEO 232, 332, 432 9
GEO 271, 322, 445 11
Related Course Requirement 24
Required: CS 210, PHY 240 8
Select: A minimum of 16 credits from courses numbered 200 or above in the following departments:
CS, EGR, GL, MTH, PHY 16
Communications Requirement 12
ML 111, 112, 113; or CLS 111, 112, 113 12
Electives 55
Select 55 credits from:
BIO 111, 112, 113, 114
CHM 101, 111, 131
CS 211
EGR 300
GL 101, 102, 103, 201, 210, 311, 422, 451
MTH 130, 131, 132, 133, 164, 231, 232, 233, 265
PHY 241, 242
Total 183

Geography-Education

Geography-education may be chosen as a second teaching field only. (See Social Studies Education for the major teaching field requirements in this area.) To be recommended for Ohio Provisional Certification in this teaching field, a student must also have completed the program of a related major teaching field. Forty-five credit hours are required, including thirty credit hours in geography and fifteen hours in other social sciences.

Geology

The Department of Geology provides two programs for a student interested in a degree with a major in geology. One program leads to a Bachelor of Science degree, the other to a Bachelor of Arts.

Each program is designed to encompass essential aspects of geology and related sciences. To provide maximum individual selection of electives, flexibility is designed into both programs. Such flexibility facilitates individual student selection of applicable and interesting courses with the assistance of faculty advising. Students entering a program or those undecided about a program should immediately select a faculty member as an adviser or request that the department chairman appoint an adviser cognizant of the student's interests. General advising is available during mass registration and all geology students who fail to meet with their assigned advisers are urged to meet with an adviser then.

The Bachelor of Science program for a degree in geology has three options: General Geology, Engineering Geology, and Geophysics. Graduates of this program will be prepared for graduate school or for a career as a professional geologist in their respective fields.

For the Bachelor of Science degree in geology, students must complete the required courses as indicated in the program; complete calculus through MTH 133 or equivalent; complete twenty-one hours of a foreign language, or twelve hours of a foreign language and nine hours of computer-related courses. Supporting electives to be chosen from biology, chemistry, engineering, mathematics, physics, computer science or statistics must be exclusive of those courses specifically required in the program given below. A field course or its equivalent is required of all Bachelor of Science and Bachelor of Arts degree candidates.

It is strongly recommended that students take the Graduate Record Examination prior to graduation. Advanced registration is required for this examination which is administered only three times per year at Wright State University. (See Counseling Service.)

The order in which science courses are taken is important. The fulfillment of departmental requirements and individual needs require the planning of a schedule in *consultation with an adviser*. The following sequences are strongly recommended.

Freshman Year: ENG 111, 112; GL 101, 102, 103; CHM 111, 121, 141; *Sophomore Year:* GL 301, 311, 430, 431.

Junior Year: GL 311, 411, 433, 434; PHY 240, 241, 242.
Senior Year: GL 412 and 12 hours of geology electives.

Bachelor of Science Degree
College of Science and Engineering

GENERAL GEOLOGY OPTION

General Education Requirement		
(waive Area Two)		35
Departmental Requirements		63
GL 101, 102, 103; 301 311	22	
GL 410, 412, 430, 431, 433, 434	29	
Geology electives	12	
Related Course Requirements (see Note, above)		62-65
CHM 111, 121, 141	12	
PHY 240, 241, 242; or 111, 112, 113	12-15	
(former sequence strongly recommended)		
Calculus	10	
Supporting electives	28	
Foreign Language Requirement		21
Electives		1-2
Total		183

Engineering Geology Option

The Departments of Geology and Engineering are cooperating in offering an engineering geology option to the Bachelor of Science degree in geology. The program is designed for those students who wish to assume a career in the rapidly expanding field of geological applications to engineering or to continue graduate training in engineering geology.

NOTE: Because the order in which science courses are taken is so important, all individual programs are to be planned in consultation with an adviser.

Bachelor of Science Degree
College of Science and Engineering

ENGINEERING GEOLOGY OPTION

General Education Requirement		
(waive Area Two)		35
Departmental Requirements		90
GL 101, 102, 103, 203, 311, 433, 434	34	
GL 350, 351, 451	12	
EGR 141, 142, 143, 212, 313; CS 210	20	
GL and EGR electives	24	
Related Requirements		47
CHM 101, 121, 141	12	
MTH 132, 133, 231, 233	20	
PHY 240, 241, 242	15	
Electives		20
Total		192

Geophysics Option

The Department of Geology in cooperation with the Depart-

ment of Physics offers a Bachelor of Science degree in geology with a geophysics option. Good geophysicists are in constant demand and this option will prepare the student to assume a career in this field or to continue in graduate study in geophysics.

Schedules should be planned in accordance with the following:

Freshman Year: ENG 111, 112; GL 101, 102, 103; CHM 111, 121, 141; MTH 132, 133, 231. *Sophomore Year:* PHY 240, 241, 242; GL 301, 411, 412; Gen. Ed. *Junior Year:* foreign language; MTH 233; CS 210, 211; PHY 430, 230; GL 311, 434. *Senior Year:* GL 423, 424, 425, 426, 427; GL electives; PHY or MTH electives; Gen. Ed.

Bachelor of Science Degree
College of Science and Engineering

GEOPHYSICS OPTION

General Education Requirement	
(waive Area Two)	35
Departmental Requirements	100
GL 101, 102, 103	12
GL 301, 311, 434, 410	24
GL 412, 423, 424, 425, 426, 427	16
PHY 240, 241, 242, 230, 430	21
Electives in geology or physics	27
Related Course Requirements	50
CHM 111, 121, 141	15
MTH 132, 133, 231, 233	20
CS 210, 211	6
electives	9
Foreign Language Requirement	12
Total	197

Recommended geology electives: GL 312, 420, 433, 440.
Recommended physics and mathematics electives: PHY 371, 372, 350, 351, 352, 420; MTH 332, 333.

Bachelor of Arts Program

The Bachelor of Arts curriculum is designed for students who desire scientific training especially through interdisciplinary programs, but who do not intend to pursue a career as a professional scientist in the field of geology. Because of its broader and more flexible approach, students who elect to follow a Bachelor of Arts program must demonstrate specific educational objectives which can reasonably be attained through this program.

Admission to the Bachelor of Arts program in geology should be undertaken with the advice and consent of a faculty adviser within the department. A student may select an adviser or request that one be appointed by the chairman. The student and adviser together will be responsible

for developing both specific educational objectives and an appropriate program to meet these goals.

Requirements in addition to courses specifically stipulated are the completion of thirty hours of supporting electives, the selection of which is left to the discretion of the student and his adviser. A summer field course is also required.

Bachelor of Arts Degree

College of Science and Engineering

General Education Requirement	35
(waive Area Two)	
Departmental Requirement	56
GL 101, 102, 103; 203 or equivalent	16
GL 311, 430, 431, 433, 434	24
GL electives	16
Related Course Requirements	47
BIO 111, 112, 113; *or* PHY 111, 112, 113; *or* CHM 111, 121, 141	12
Supporting electives	25
Mathematics	10
Foreign Language Requirement	21
Electives	24
Total	183

General Science-Education

Candidates for the Bachelor of Science in Education degree may elect general science as a second teaching field only. Requirements are forty-eight credit hours, including BIO 111, 112, 113; CHM 111, 121, 131; PHY 111, 112, 113; and GL 101, 102, 103.

German

See Modern Languages.

Greek

Because contemporary Western culture has its roots in ancient Greece, the student of the Greek language has many opportunities for rewarding work in the fields of art, drama, literature, history, religion, and especially philosophy.

Besides a thorough grounding in the Greek language, the Greek major at Wright State pursues a program of related studies in classical humanities, as well as studies in art,

language, and literature which he can tailor to fit his own needs and interests.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirement	47
Departmental Unit	36
Greek language	24
Classical humanities electives	12
Related Courses	24
Latin, history, philosophy, religion, English, modern language electives	
Electives	76
Total	183

History

An understanding of man's past history is indispensable to an understanding of his present and his probable future. To a student of history, the relationship existing among a wide variety of cultural traditions provides the key to an understanding of man's literary, artistic, religious, philosophical, and cultural heritage.

The history major at Wright State provides an exhaustive study of world history, with concentration in any area of special interest to the student. A program of related course work in economics, political science, sociology, religion, philosophy, literature, and the arts gives the student a frame of reference for understanding the relationship of man's past to his present. The program provides a sound basis for the student who is planning to pursue study on the graduate level.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirement	47
Departmental Unit	51
HST 498, 499	6
American history (upper division)	9
European history (upper division)	9
History electives	27
Related Courses (12 hours to be in *one* of these fields.)	24
Anthropology, art, classics, economics, literature, geography, music, philosophy, political science, religion, or sociology electives	
Language Requirement	21
One language	21
(or successful completion of proficiency examination)	
Electives	40
Total	183

Majors wishing secondary teaching certification should consult record analysts in the College of Education at the start of the junior year to ensure that they meet all necessary requirements for certification; they must pursue the following program:

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirements**		47
Departmental Unit		51
HST 498, 499	6	
American history	9	
European history	9	
History electives	27	
Related Courses (30 hours in *one* of these fields)		30
Anthropology, art, classics, economics, literature, geography, music, philosophy, political science, religion or sociology electives		
Language Requirements		21
One language	21	
(or successful completion of proficiency examination)		
Mathematics*		3
Education Requirements		33-36
ED 202, 203	6	
ED 439	4	
ED 422, 429	15-18	
ED 440, 464	8	
Electives		4-7
Total		192

History-Education

The Bachelor of Science in Education program with a major in history prepares the student to teach history in the secondary schools. The program requires advanced work in American history and world history, including European and non-Western history. The student must also complete the requirements of at least one second teaching field in a related social science (economics, geography, political science or sociology). More than one supporting field is recommended (see Social Studies Education for comprehensive program).

Because of the sequential character and prerequisites in both the professional and academic components of the program, the student is strongly advised to consult an adviser before registering. Advisers will be assigned in the College of Education; however, students are encouraged to consult an adviser in the Department of History for specific course recommendations.

*May be waived with proficiency examination.
**Must include PSY 111, 112 and SPC 135, 136.

Bachelor of Science in Education Degree
College of Education

Professional Education Requirements		33-36
ED 202, 203 (Gen. Ed., Area Three — 1 course)	6	
ED 439	4	
ED 422, 429	15-18	
ED 440, 464	8	
Related Requirements		15
PSY 111, 112 (Gen. Ed., Area Three — 2 courses)	6	
Mathematics*	3	
SPC 135, 136	6	
Major Requirements		51
HST 498, 499	6	
American history (upper-division)	9	
European history (upper-division)	9	
Non-Western history (upper-division)	6	
History electives	21	
Related social science second teaching field		30
(Courses to complete the requirements of a second teaching field in one of the following areas: economics, geography, political science or sociology)		
Additional General Education Requirements		29
Area One	8	
Area Two	12	
Area Three B	9	
Electives		31-34
Total		192

HISTORY-EDUCATION AS A SECOND TEACHING FIELD

Forty-five credit hours of history are required, including at least two advanced courses in each of the following areas: American history, European history and non-Western history.

International Business

See Administrative Sciences and Finance

Latin

The study of the Latin language is important to many disciplines. Students of history, philosophy, religion, literature, art, and science will find a knowledge of Latin invaluable not only in reading and interpreting past work, but also in understanding modern languages and linguistics.

The Latin major at Wright State studies the structure and development of the language and also the literature produced in the language. A program of related studies emphasizes the classical humanities. Students planning on

a career of teaching Latin in secondary schools should consult record analysts in the College of Education at the start of the junior year to ensure that they will meet all of the necessary requirements for certification.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirement	47
Departmental Unit	36
Latin language and literature	36
Related Courses	24
English, political science, philosophy, or other approved electives	24
Electives	76
Total	183

Latin-Education

Candidates for the Bachelor of Science in Education degree may elect Latin education as a second teaching field only. Thirty credit hours are required, beginning at the 201 level or above. The remaining hours may be distributed among Latin 351, 353, 355, 357, 451, 453, and 455; these courses are repeatable by number, but not by content. Greek, classical humanities, and linguistics courses are recommended.

Library Science-Education

See Educational Media.

Management

The student electing a major in management has three general areas of concentration from which to choose: general management, production management, and manpower and industrial relations management. Specific details for each area of concentration are spelled out in the program below.

During the freshman year, all management majors are encouraged to take PSY 111 and 112 as the social science elective. A basic core of management courses is common to all majors.

Bachelor of Science in Business Degree
College of Business and Administration

General Education Requirement	38

Professional Business Core		75
BUS 101, 102, 301, 302, 303, 350, 481, 482	24	
MTH 130, 158, 164	9	
ACC 201, 202, 203	9	
EC 201, 202, 203; 301	12	
ENG 331	3	
FIN 301, 302	6	
MGT 301, 302	6	
MKT 301, 302	6	
Required Courses for Major in Management		15
MGT 303	3	
MGT 411	3	
MGT 412	3	
MGT 421	3	
ACC 300	3	
Area of Concentration		30-36
General Management		
Select two courses from list:		
MGT 422, 423, 431, 432, 433	6	
Select three from list:		
ACC 321, 322, BUS 103, 311, 312, 411, 412, EC 351, 352, 401, 454, MKT 471, MTH 224, 225, PSY 321, 325, 331, 443, SOC 300	9	
Professional electives	15-24	
Manpower and Industrial Relations		
MGT 422, 423	6	
Select three courses from list:		
EC 351, 352, 454, PSY 321, 325, 331, 443, SOC 300, PHL 371	9	
Professional electives	15-20	
Production Management		
MGT 431, 432, 433	9	
Select two courses from list:		
BUS 103, 311, 312, 411, 412 ACC 321, 322, EC 401, MTH 224, 225	6	
Professional electives	15-24	

Marketing

Students who wish to major in marketing take a minimum of eight marketing courses as shown in the program below. In addition, informal specialization is provided in six areas: physical distribution management, sales management, industrial marketing, retail management, international marketing, and marketing research and advertising. The elective groupings listed below are recommended for the student who desires to pursue a course of study leading to moderate specialization within the marketing field. These courses are not required but are suggestions to the student electing to develop an informal specialty in addition to meeting the university and college requirements and those of the marketing core.

Bachelor of Science in Business Degree
College of Business and Administration

General Education Requirement	38
Professional Business Core	75
BUS 101, 102, 301, 302, 303, 350, 481, 482	24
MTH 130, 158, 164	9
ACC 201, 202, 203	9
EC 201, 202, 203; 301	12
ENG 331	3
FIN 301, 302	6
MGT 301, 302	6
MKT 301, 302	6
Required Courses for Major in Marketing	25
MKT 303, 441, 451, 452, 492	15
Any two of the following:	
MKT 401, 411, 421, 431, 461, 471	6
PSY 321 or any 300-level PSY course	4
Recommended Electives Leading to Informal Specialization	18-22
Physical Distribution Management	21
MKT 431, 471, 401, 411; MGT 433	15
SPC 135, 136	6
Sales Management	22
MKT 401, 431, 411, 336	12
EC 351; SPC 135, 136	10
Industrial Marketing	21
MKT 431, 471, 401, 411; MGT 433	15
SPC 135, 136	6
Retail Management	18
MKT 411, 461, 401, 336	12
SPC 135, 136	6
International Marketing	20
MKT 421, 431, 471	9
EC 441, 442	8
Marketing Research and Advertising	21
MTH 224; BUS 311	9
PSY 325, 331, 385	12
Professional and Nonprofessional Electives	26-30
Total	186

Mathematics

The Department of Mathematics offers programs at both the undergraduate and graduate levels. Both Bachelor of Arts and Bachelor of Science degrees are available to the undergraduate with a major in mathematics, and the Master of Science degree is available at the graduate level. For the bachelor's degree the student has three options: the regular mathematics program, a computing option, and a secondary education program in mathematics leading to the Bachelor of Science in Education degree through the College of Education.

REGULAR MATHEMATICS PROGRAM

A mathematics major in the regular program pursuing a Bachelor of Science degree must take a minimum of 60 credit hours of courses in mathematics. These courses must be chosen from three groups: (1) required mathematics courses, (2) recommended mathematics courses, and (3) elective mathematics courses. A course in computer programming and PHY 240, 241, 242 are also recommended. College and university requirements must be satisfied as well. Requirements for a Bachelor of Arts degree in mathematics may be obtained directly from the department.

An honors program is available for students of exceptional ability. Any student who has completed at least two of the courses MTH 431, 451, 457, or 462 before the beginning of his senior year and has received grades of A in two of these, may petition the department for permission to engage in an honors program of study under the guidance of a faculty member of the department. Further details on this program are available from the departmental office.

In planning a program of study, careful attention should be given to the sequence of courses. All programs should be worked out in consultation with the student's academic adviser.

Bachelor of Science Degree
College of Science and Engineering

REGULAR MATHEMATICS MAJOR

General Education Requirement 47
Departmental Requirements 60
Required Courses:
MTH 132, 133, 231, 232, 233; **or**
135, 136, 137, 235, 236, 237, 238, 239
MTH 451, 452, 453; 431, 432; 433 or 331
Recommended Courses:
MTH 280, 337, 338, 433
Elective Courses:
MTH 310, 333, 360, 381, 437, 438, 439, 457, 458, 461, 462, 463, 464, 465, 471, 472, 475, 488, 492 or any 700 course with approval of Division of Graduate Studies
CS 316, 317, 351, 352, 353
PHL 423
Electives 76
Recommended: PHY 240, 241, 242; foreign language; computing language
Total 183

MATHEMATICS WITH COMPUTING OPTION

Students following the mathematics program with the computing option should choose their elective courses (mathe-

matics and general) in consultation with the major adviser to form a concentration in a field of computer application in which the student is interested. Such fields might include a science, economics, business, a social science, etc. For those interested in a business concentration, the following general program of electives is suggested. *Freshman Year:* EC 201, 202, 203 (9 hours); *Sophomore Year:* ACC 201, 202, 203, BUS 103 (12 hours); *Junior Year:* FIN 301, 302, MGT 301, 302, MKT 301, 302, ENG 331 (21 hours); *Senior Year:* advanced work in the College of Business and Administration (9-18 hours). Total hours in concentration: 51-60.

Bachelor of Science Degree
College of Science and Engineering

MAJOR IN MATHEMATICS WITH COMPUTING OPTION

General Education Requirement	47
Departmental Requirements	61
MTH 132, 133, 231, 232, 233; or 135, 136, 137, 235, 236, 237, 238, 239	
MTH 310; 355 (waived for students who take 451-453)	
MTH 461; CS 351, 352, 353	
5 of the following: MTH 431, 432, 433, 462, 463, 457, 458; CS 316, 317	
Electives	75
CS 210, 211, 221 recommended	
Total	183

Mathematics-Education

Because of the sequential character and prerequisites in both the professional and academic components of education programs, the student is strongly advised to consult an adviser before registering.

Bachelor of Science in Education Degree
College of Education

Professional Education Requirements	32-36
ED 202, 203 (Gen. Ed., Area Three — 1 course)	6
ED 338	3
ED 422, 429	15-18
ED 440, 464	8
Related Requirements	12
PSY 111, 112 (Gen. Ed., Area Three — 2 courses)	6
SPC 135, 136	6
Mathematics Education Major Requirements	64-66
MTH 132, 133, 231, 232 or equivalent	20
MTH 280, 431, 440, 451, 452, 471	18
MTH 461 or 360	3-5
MTH 441, 442	8
PHY 240, 241, 242 (Gen. Ed., Area Two)	15

Additional General Education Requirements		26
Area One	8	
Area Three A or B	9	
Area Three B	9	
Electives (second or supporting field suggested		53-58
Total		192

MATHEMATICS AS A SECOND TEACHING FIELD

Candidates for the Bachelor of Science in Education degree who elect mathematics as a second teaching field are required to take thirty credit hours of mathematics.

Mathematics courses through 231 (calculus), MTH 280, 440, 451, and 471 are required, with the remainder of the hours in advised electives.

Medical Technology

See Biological Sciences.

Mentally Retarded (Slow Learner) Education

See Elementary Education.

Modern Languages

There are many challenging career opportunities open to students with a major in a foreign language. These include teaching in high schools or universities, civil service (especially consular work and intelligence), international business (export-import, travel agencies, airlines, shiplines), and interpreting.

The Department of Modern Languages offers majors leading to a Bachelor of Arts degree in French, German, and Spanish. The Bachelor of Science in Education degree is also available through the College of Education with majors in these three languages. Courses are offered in Russian and linguistics as well, although there are currently no majors in these subjects. Programs for both the Bachelor of Arts and the Bachelor of Science in Education degrees are described below.

Bachelor of Arts Degree
College of Liberal Arts

MAJOR IN FRENCH

General Education Requirement	47

Departmental Unit	45
FR 201, 202, 203; 301, 302, 303	18
FR 321, 322, 323; 341, 342, 343; 361	17
French electives (300- and 400-level courses)	10
Related Courses	24
Electives from art, classics, English, history, music, philosophy, religion, speech, languages	
Electives	67
Total	183

Bachelor of Arts Degree
College of Liberal Arts

MAJOR IN GERMAN

General Education Requirement	47
Departmental Unit	45
GER 201, 202, 203; 301, 302, 303	18
GER 321, 322, 323; 341,342, 343	15
German, electives (300- and 400-level courses)	12
Related Courses	24
Electives from art, classics, English, history, music, philosophy, religion, speech, languages	
Electives	67
Total	183

Bachelor of Arts Degree
College of Liberal Arts

MAJOR IN SPANISH

General Education Requirement	47
Departmental Unit	45
SPN 301, 302, 303; 341, 342, 343; 361	17
SPN 321, 322, 323; 331, 332, 333	18
Spanish electives (300- and 400-level courses)	10
Related Courses	24
Electives from art, classics, English, history, music, philosophy, religion, speech, languages	
Electives	67
Total	183

Modern Language-Education

A student may prepare to teach French, German, or Spanish in the secondary schools by following one or more of the following programs. Two years of credit in high school language or the equivalent first-year college courses are prerequisite for each program but *not* included in the required credit hours. In addition to course work, the candidate for certification in a modern foreign language is required to pass an oral proficiency examination. Because of the sequential character and prerequisites in both the professional and academic components of education programs, the student is strongly advised to consult an adviser before registering.

Bachelor of Science in Education Degree
College of Education

Professional Education Requirements		32-35
ED 202, 203 (Gen. Ed., Area Three — 1 course)	6	
ED 334	3	
ED 422, 429	15-18	
ED 440, 464	8	
Related Requirements		15
PSY 111, 112 (Gen. Ed., Area Three — 2 courses)	6	
Mathematics*	3	
SPC 135, 136	6	
Major Requirements (one or more of the following areas)		50
French		
FR 201, 202, 203; 301, 302, 303 (Gen. Ed., 3 courses)	18	
FR 321, 322, 323; 341, 342, 343; 361	17	
French electives (300- and 400-level courses)	15	
German		
GER 201, 202, 203; 301, 302, 303 (Gen. Ed., Area Three — 3 courses)	18	
GER 321, 322, 323; 341, 342, 343	15	
Recommended German electives (300- and 400-level courses)	17	
Spanish		
SPN 201, 202, 203; 301, 302, 303 (Gen. Ed., Area Three — 3 courses)	18	
SPN 321, 322, 323; 331, 332, 333; 341, 342, 343; 361	26	
Spanish electives (300- and 400-level courses)	6	
Additional General Education Requirements		29
Area One	8	
Area Two	12	
Area Three A or B	9	
Electives (second or supporting teaching fields suggested)		63-66
Total		192

MODERN LANGUAGE AS A SECOND TEACHING FIELD

A minimum of forty-five credit hours in one language is required, including a minimum of 18 hours in language command and 9-12 hours of civilization and literature.

Music

The Department of Music offers thorough four-year curricula designed for the serious student who wishes to pursue a career in music education or in applied music. As a member of the National Association of Schools of Music, the department has designed the requirements for entrance and graduation in accordance with the published regulations of the association. The Bachelor of Music degree is offered with majors in music education, in music theory, and in applied

music. In addition, the department offers opportunities to students majoring in other academic areas to enrich their lives by study in general music courses and by participation in choral or instrumental organizations.

In addition to the admission procedure for the university, the prospective music major must take the following steps:
(1) an interview with the department chairman; (2) completion of the departmental application; (3) performance of an acceptable audition in his major performance medium; (4) examinations in music theory and musical aptitude; (5) assignment to an adviser from the music faculty who will process registration.

Transfer students must submit a complete transcript of all previous work in addition to completing the above steps. Courses which parallel those of the Department of Music will be accepted, as long as they meet the academic requirements of the registrar. Placement in applied music will be determined by the music faculty during the first quarter of residence. A minimum of one year of full-time study will be required of any transfer student working toward a degree.

Because of the high cost of individual instruction, special fees are charged for applied music. These are held at the reasonable quarter rate of $30 for one lesson per week or $60 for two. A $5 rental fee is charged each quarter for class instruction in strings, woodwinds, and brass instruments.

The music faculty requires a high percentage of attendance at recitals, concerts, and similar lectures or performances. The development of musical repertoire, performance skills, and discriminate listening is an important part of the curriculum of music majors and the fulfillment of this requirement is necessary for graduation. A schedule of acceptable performances is published quarterly. Attendance at a minimum of eight performances is required during each quarter in residence, with the exception of the quarter in which he performs his senior recital.

All students in the university are eligible to participate in the musical organizations. Membership in the University Band, Orchestra, Chorus, or any other authorized ensemble is required of all music majors throughout their period of study, as described in the curricular outlines.

A progressive course of study based on four grade levels of technical proficiency, musicianship, and repertoire has been developed in all applied music fields. Minimum requirements in each category are available to the music major and will be supplied upon request. Music majors will perform for the faculty twice each year, as follows: fresh-

men — end of first and third quarters; upperclassmen — end of second and third quarters.

All music majors must pass a keyboard proficiency test on piano before the end of the junior year. A copy of this test is available to students upon request.

During a period of four years of study, there are many opportunities for the music major to perform in class recitals and concerts. During the senior year, applied music majors will perform a solo recital; music education majors may perform a solo recital or they may share a recital with another music education major. Majors in music theory must have their compositions performed in a recital. All recitals must be approved by the music faculty upon the recommendation of the studio teacher before the student is qualified for graduation.

All music majors are required to take a senior comprehensive examination at the end of the junior year.

Curricula Leading to the Bachelor of Music Degree

1. Students choosing a music curriculum should, in addition to meeting the university's general requirements for admission, have a thorough grounding in the fundamentals of music. Specifically, each student who becomes a major in music must pass an examination admitting him to MUS 101-2-3 before his registration for this course is considered final. (Students who fail to pass the examination are required to make up their deficiencies in a preparatory course, MUS 116, for which no credit is given toward a degree.)

2. The department offers majors in music education, theory of music, and in the following fields of applied music: piano, voice, organ, violin, viola, violoncello, string bass, flute, oboe, clarinet, bassoon, trumpet, French horn, and trombone. In certain instances, students may major in fields other than those listed. Approval in advance by the music faculty must be obtained for study in and transfer of credit from another institution. The approval will include the proposed program of study, the institution in which it is to be carried on, and the individual teacher with whom it is to be pursued. A student majoring in one of the areas of applied music must study continuously in that field throughout his whole course, and must give a public senior recital. A student may elect to major in theory of music only after being advanced to performance level 3 in his principal performing medium. Should his performing medium be other than piano the theory major must undertake the study of piano as a secondary instrument. To be eligible for the Bachelor of Music degree, the applied music student must have a minimum cumulative average of 3.0 in his major performing

medium (or, if he is a theory major, in all theory courses undertaken), and 2.0 in all other required music courses.

3. No student will be admitted to the theory of music as a major without the approval of the music faculty and at least a 3.0 average in his previous theoretical work.

4. Violin majors are required to study viola for one quarter and viola majors are required to study violin for one quarter.

5. Any student, except the major in voice, able to pass a reading examination in French, Spanish, or German may substitute elective hours for language requirements.

6. The study of organ as a major presumes previous study and experience in pipe organ and piano.

NOTE: Because of the sequential character and prerequisites in both the professional and academic components of these programs, the student is strongly advised to consult an adviser before registering.

Bachelor of Music Degree
College of Liberal Arts

Major in Music Education: Concentration in Voice

General Education Requirement	47
Departmental Core Requirement	69
MUS 100 or MUS 155	3
MUS 101-2-3; 201-2-3	18
MUS 151-2-3; 251-2-3	6
MUS 121-2-3; 311-2-3	18
MUS 335-6	6
MUS 481-2-3	6
HST 121-22-23*	(9)
PSY 111-12*	(6)
MUS 105, 115, or 135	12
Major Requirements	87
MUS 145-6-7; 215-6-7	6
MUS 224-5-6; 227-8-9	6
MUS 323-4; 328-9	14
MUS 421-2	4
ED 202-3*	(6)
ED 429	12
ED 422	3
ED 440	4
ED 464	4
LI 261-2 (all voice concentrations)*	4
MUS 110	24
Electives	1
Total	200-204

Bachelor of Music Degree
College of Liberal Arts

Major in Music Education: Concentration in Band and Orchestral Instruments

General Education Requirement	47

*Credit hours counted as part of General Education Requirement.

Departmental Core Requirement	75
MUS 100 or MUS 155	3
MUS 101-2-3; 201-2-3	18
MUS 151-2-3; 251-2-3	6
MUS 121-2-3; 311-2-3	18
MUS 335-6	6
MUS 481-2-3	6
HST 121-22-23*	(9)
PSY 111-12*	(6)
MUS 105	6
MUS 115 or 135	12
Major Requirements	83
MUS 145-6-7; 215-6-7	6
MUS 224-5-6; 227-8-9	6
MUS 323-4; 328-9	14
MUS 421-2	4
ED 202-3	6
ED 429	12
ED 422	3
ED 440	4
ED 464	4
MUS 120, 130, 140, 150, 170, 180, 190, 200, 210, 220, 230, 240, 250, 260, or 270	24
Electives	1
Total	206

Bachelor of Music Degree

College of Liberal Arts

Major in Music Education: Concentration in Piano or Organ, Secondary Concentration in Voice or Band and Orchestral Instruments

General Education Requirement	47
Departmental Core Requirement	60-69
MUS 100 or MUS 160	24
MUS 101-2-3; 201-2-3	18
MUS 151-2-3; 251-2-3	6
MUS 121-2-3; 311-2-3	18
MUS 335-6	6
MUS 481-2-3	6
HST 121-22-23*	(9)
PSY 111-12*	(6)
MUS 105 (all instrumental concentrations)	6
MUS 115 or 135 (all instrumental concentrations)	12
Major Requirements	97-101
MUS 145-6-7; 215-6-7	6
MUS 224-5-6; 227-8-9	6
MUS 323-4; 328-9	14
MUS 421-2; 430	6
ED 202-3	6
ED 422	3
ED 429	12
ED 440	4
ED 464	4
LI 261-2 (all voice concentrations)*	4
MUS 100 or 160	24
Applied Music (secondary)	12
Electives	1
Total	205-214

Bachelor of Music Degree
College of Liberal Arts
Major in Applied Music

General Education Requirement		47
Departmental Core Requirement		57
MUS 100 or 155	3	
MUS 101-2-3; 201-2-3	18	
MUS 151-2-3; 251-2-3	6	
MUS 121-2-3; 311-2-3	18	
MUS 335-6	6	
MUS 481-2-3	6	
HST 121-22-23*	(9)	
PSY 111-12-13*	(6-9)	
Major Requirements		112-119
MUS 301-2-3; 351-2-3	12	
French, German, or Spanish**	9	
Major in Voice	(81)	
MUS 441-2; 320; 420; 481-2-3	17	
LI 261-2	4	
MUS 110	48	
MUS 105	12	
Major in Piano	(86)	
MUS 451-2-3; 401-2-3; 430; 481-2-3	26	
MUS 100	48	
MUS 105	3	
MUS 205	9	
Major in Organ	(89)	
MUS 401-2-3; 175; 441-2; 481-2-3	20	
Religion elective	9	
MUS 160	48	
MUS 105	9	
MUS 205	3	
Major in Strings	(98)	
MUS 421-2-3; 441-2; 401-2-3; 215-6-7; 481-2-3	26	
MUS 205	9	
MUS 180, 190, 200, or 210	48	
MUS 105	3	
MUS 135	12	
Major in Winds	(95)	
MUS 421-2-3; 401-2-3; 471-2-3; 481-2-3; 441-2	23	
MUS 125	9	
MUS 120, 130, 140, 150, 170, 220, 230, or 240	48	
MUS 105	6	
MUS 115	6	
MUS 135	3	
MUS 115 or 135	6	
MUS 205	3	
Electives		1
Total		217-224

*Credit hours counted as part of General Education Requirement.

**Students (except voice majors) able to pass a reading examination in one of these languages may substitute elective hours for this requirement.

Bachelor of Music Degree
College of Liberal Arts

Major in Theory

General Education Requirement		47
Departmental Core Requirement		69
MUS 100 or 155	3	
MUS 101-2-3; 201-2-3	18	
MUS 151-2-3; 251-2-3	6	
MUS 121-2-3; 311-2-3	18	
MUS 335-6	6	
MUS 481-2-3	6	
HST 121-22-23*	(9)	
PSY 111-12-13*	(6-9)	
MUS 105, 115, or 135 (ensemble in major concentration)	12	
Major Requirements		75
MUS 301-2-3; 351-2-3	12	
French, German, or Spanish**	9	
MUS 421-2-3; 401-2-3; 471-2-3	24	
MUS 205	3	
Applied Music (concentration) and Applied Music (secondary)	27	
Total		191

Music-Education

See Music.

Office Administration

See Administrative Sciences and Finance.

Philosophy

Every student is expected to complete an integrated program in ethics, philosophy of language, or philosophy of science.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirement		47
Departmental Unit		36
Philosophy electives	36	
Related Courses		24
Language Requirement		21
Two years of one foreign language		
Electives		55
Total		183

Physics

The Department of Physics offers a program leading to a Bachelor of Science degree with a major in physics. Students in secondary education may major in physics and earn the Bachelor of Science in Education degree, awarded through the College of Education; see Physics Education.

Minimum requirements for a Bachelor of Science degree with a major in physics include successful completion of the required courses indicated in the program below, as well as completion of the degree requirements as set forth by the university and the college at the beginning of this chapter.

In addition to the required courses, it is recommended that every physics major take the following courses: PHY 150, 151, 152, 421, 430 and 442; BIO 111, 112, 113. The physics major planning on graduate study is also strongly urged to take the following courses: PHY 480, 481, 482, one to two years of a foreign language (French, German, or Russian), and additional mathematics courses.

The results of the mathematics placement examination will be used to determine the proper initial mathematics course (see mathematics course listings in the final section of this catalog) in which the student should enroll. If a student has a strong science and mathematics background and enrolls in MTH 132 the first quarter of the freshman year, the following program can be used as a guide. If a student does not have a strong science and mathematics background, but enrolls in MTH 132 the first quarter of the freshman year, he may substitute PHY 111, 112, 113 for 240, 241, 242 and then take PHY 209 the first quarter of the sophomore year and PHY 230 the first quarter of the junior year.

Since the sequence in which these courses are taken is so important, the student should adhere closely to the following suggested program. *Freshman Year*: PHY 240, 241, 242, 150, 151, 152; MTH 132, 133, 231; Freshman English; *Sophomore Year:* PHY 230, 371, 372, 314; CS 210; MTH 232, 233, 331; CHM 111, 121, 141; *Junior Year*: PHY 350, 351, 352; PHY 420, 421, 314; MTH 332, 333; BIO 111,112, 113; *Senior Year*: PHY 460, 461, 462, 442, and 494 or 499.

If a student is unable to start with MTH 132 the first quarter of the freshman year, the following alternative schedule can be used as a guide. *Freshman Year*: PHY 150, 151, 152; MTH 130, 131, 132; CHM 111, 112, 113; Freshman English; *Sophomore Year:* PHY 240, 241, 242; MTH 133, 231, 232; CS 210; *Junior Year*: PHY 230, 371, 372, 314,

350, 351, 352; MTH 233, 331, 332; BIO 111, 112, 113; *Senior Year*: PHY 460, 461, 462, 420, 421, 442, and 494 or 499; MTH 333.

Bachelor of Science Degree
College of Science and Engineering

General Education Requirement		
(waive Area Two)		35
Departmental Requirements (see Note, above)		56-57
PHY 111, 112, 113, 209; or 240, 241, 242	15-16	
(or 270, 271, 272, 273); 230	4	
PHY 314 (2 quarters), 371, 372	10	
PHY 350, 351, 352; 420; 460, 461, 462	21	
PHY 494 or 499 (three quarters)	6	
Related Course Requirements (see Note, above)		49
MTH 132, 133, 231; 232, 233, 331	28	
MTH 332, 333	6	
CHM 111, 121, 141	12	
CS 210	3	
Electives		42-43
Total		183

Physics with Biology Option

The Department of Physics in cooperation with the Department of Biological Sciences offers a program leading to a Bachelor of Science degree in physics with a biology option. This option is designed for students who plan a physics career in a biology-related setting or who want to pursue graduate study in biophysics.

Students following the physics program with the biology option must meet the requirements of the basic physics degree program. In addition, these courses are required:

BIO 111, 112, 113	12
PHY 430	4
Biology Seminar (biophysics emphasis) 492	1
CHM 211, 212	10
Electives to be chosen from the following courses:	
BIO 210, 310, 316, 213, 450	9
	36

In addition to these required courses, it is recommended that the student pursuing the biology option take PHY 150, 151, 152.

Since the sequence in which courses are taken is so important, the student is urged to adhere closely to the following schedule: *Freshman Year*: PHY 240, 241, 242; MTH 132, 133, 231; ENG 111, 112; PHY 150, 151, 152. *Sophomore Year*: PHY 230, 371, 372, 314; MTH 232, 233, 331; CHM 111, 121, 141; BIO 111, 112; CS 210. *Junior Year*: PHY 350, 351, 352, 420, 314; MTH 332, 333; CHM 211, 212, 213; BIO 113. *Senior Year*: PHY 460, 461, 462, 494, 430; biology electives.

If a student is unable to start with MTH 132 during his first quarter, he should adhere closely to the following schedule: *Freshman Year:* MTH 130, 131, 132; ENG 111, 112; BIO 111, 112, 113; CHM 111, 121, 141. *Sophomore Year:* PHY 150, 151, 152, 240, 241, 242; MTH 133, 231, 232. *Junior Year:* PHY 230, 371, 372, 314, 350, 351, 352; MTH 233, 331, 332; CHM 211, 212, 213; CS 210. *Senior Year:* PHY 460, 461, 462, 494, 420, 430; MTH 333; biology electives.

Physics with Geophysics Option

The Department of Physics in cooperation with the Department of Geology offers a program leading to the Bachelor of Science degree in physics with a geophysics option. This option is designed for students who plan a career in physics in a geology-related setting or who plan to pursue graduate study in geophysics.

Students following the physics program with the geophysics option must meet the requirements of the basic physics degree program except that only four credit hours of PHY 494 are required. In addition, the following courses are required:

GL 101, 102	8
PHY 430	4
PHY 423, 424, 425, 426, 427	11
Electives to be chosen from the following:	
GL 301, 311, 312, 410, 412, 433, 451	15
	38

In addition to these required courses, it is recommended that the student pursuing the geophysics option take PHY 150, 151, 152, and GL 434.

Since the sequence in which courses are taken is so important, the student is advised to adhere closely to the following schedule: *Freshman Year:* PHY 240, 241, 242; MTH 132, 133, 231; ENG 111, 112; PHY 150, 151, 152. *Sophomore Year:* PHY 230, 371, 372, 314; MTH 232, 233, 331; CHM 111, 121, 141; GL 101, 102; CS 210. *Junior Year:* PHY 350, 351, 352, 420, 314; MTH 332, 333; five GL electives. *Senior Year:* PHY 460, 461, 462, 423, 424, 425, 426, 427, 494, 430.

If a student is unable to start with MTH 132 during his first quarter, he should adhere closely to the following schedule: *Freshman Year:* PHY 150, 151, 152; MTH 130, 131, 132; ENG 111, 112; GL 101, 102, 103. *Sophomore Year:* PHY 240, 241, 242; MTH 133, 231, 232; CHM 111, 121, 141; geology elective. *Junior Year:* PHY 230, 371, 372, 314, 350, 351, 352; MTH 233, 331, 332; geology electives; CS 210.

Senior Year: PHY 460, 461, 462, 423, 424, 425, 426, 427, 494, 420; MTH 333; PHY 430.

Physics with Mathematics Option

This program is designed to provide physics majors with a good background in mathematics and strong preparation to enter graduate training in various areas of physics — in particular, theoretical physics — and applied mathematics.

In addition to the basic requirements for a physics major, those choosing the mathematics option are required to take:

PHY 480, 481, 482	9
MTH 337, 338	6
MTH 431, 432, 433	9
MTH 451, 452, 453	9
	33

The two quarters of MTH 337 and 338 are used to replace MTH 332, as required of all physics majors.

Students choosing this option are encouraged to take all or part of the following courses in mathematics, depending upon their particular interests: MTH 316, 317, 461, 464, 465, 475.

In addition, students choosing this option are encouraged to take all or part of the following courses in mathematics, depending upon their particular interests: MTH 316, 317, 461, 464, 465, 475.

The following is a sample program for students enrolling with mathematics option: *Freshman Year*: PHY 150, 151, 152, 240, 241, 242; MTH 132, 133, 231; freshman English. *Sophomore Year*: PHY 230, 371, 372; CS 210; MTH 232, 233, 331; CHM 111, 121, 141. *Junior Year:* PHY 350, 351, 352, 420, 314; MTH 333, 337, 338, 451, 452, 453. *Senior Year:* PHY 460, 461, 462, 480, 481, 482, 494 or 499; MTH 431, 432, 433.

Physics-Education

The physics education program prepares students to teach physics, integrated physics science, and general science in the secondary school. The concentration in physics provides intensive preparation in that area with courses in modern physics, electricity and magnetism, and analytical mechanics. The program also includes basic and supporting courses in biology and chemistry, related course work in mathematics, and the professional education courses required of all candidates for secondary school certification. Students are strongly advised to complete a second teaching field in

biological sciences, chemistry, earth science, or mathematics in addition to the basic program in physics.

Because of the sequential character and prerequisites in both the professional and academic components of the program, the student is strongly advised to consult an adviser before registering.

Bachelor of Science in Education Degree
College of Education

Professional Education Requirements		32-35
ED 202, 203 (Gen. Ed., Area Three — 1 course)	6	
ED 431	3	
ED 422, 429	15-18	
ED 440, 464	8	
Related Requirements		12
PSY 111, 112 (Gen. Ed., Area Three — 2 courses)	6	
SPC 135, 136	6	
Physics Concentration Requirements		97-101
PHY 240, 241, 242 (Gen. Ed., Area Two)	15	
PHY 230, 350, 351, 352	13	
PHY 314, 371, 372	8	
BIO 111, 112, 114	12	
CHM 111, 121, 131 and/or 141	12-16	
GL 101, 102, 103	12	
MTH 132, 133, 231, 232, 233	25	
Additional General Education Requirements		26
Area One	8	
Area Three A or B	9	
Area Three B	9	
Electives		22-25
Total		192

PHYSICS EDUCATION AS A SECOND TEACHING FIELD

Physics education as a second teaching field requires only thirty credit hours including PHY 240, 241, 242, 230; CHM 111, 121, 131 and/or 141.

Political Science

The Department of Political Science offers courses and programs of study in American government and politics, international affairs and diplomacy, comparative government, and regional studies.

A political science major must complete forty-eight hours of course work in political science, at least twenty-four of which must be taken at Wright State University. It is recommended that majors in political science take a course in international relations and in political theory. The following courses can be taken only with the permission of the instructor: PLS 393, 394, 395, 490, 491, 492, 493, 494. These courses cannot be taken as part of the 48-hour minimum

requirement for political science majors. In addition, Independent Readings and Contemporary Problems shall be restricted to juniors and seniors maintaining a 3.0 grade average.

A minor in political science is offered by the department. A total of twenty-four hours is required to fulfill this condition.

To graduate with a Bachelor of Arts in political science, students must complete one year of a foreign (preferably a modern) language — that is, complete the 103-level course in that language. Alternately, students can fulfill this requirement by passing a language proficiency test at the 103 level, or a reading test in that language administered by the Department of Modern Languages.

Prelaw students pursuing the Bachelor of Arts degree are advised to declare a major in political science.

Honors Program

Political Science majors with a grade average of 3.0 in political science may compete for honors. In exceptional cases the department may allow a student without a 3.0 average to compete for honors upon recommendation of one member of the department. Each proposal will be examined by the departmental Honors Committee, for their approval.

Students can achieve honors in either of two ways:

a. Complete and defend a senior thesis on a topic approved by the department. One to four hours of academic credit per quarter (up to a maximum of twelve credits in three quarters) may be earned for thesis research. In the case of a thesis based primarily upon field research, students must also relate to the literature in the field. The examining committee may include professors from other departments.

b. Pass a comprehensive oral and written examination embracing three subfields in the discipline of political science. Students selecting this alternative will normally register for a course in independent readings (one to four hours) winter or spring quarter of their senior year.

High honors will be conferred on those passing the thesis or the comprehensive exam with an "A" grade. Honors will indicate an average grade of "B" on the thesis or examination. A passing grade below "B" will entitle a student to academic credit without honors.

Credit hours earned in an honors program do not count toward the 48-hour minimum required of majors.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirement 47

Departmental Unit	48
PLS 111, 112, 113; or 111, 122, 123	9
Political science electives	39
Related Courses*	24
Economics, geography, history, philosophy, psychology, or sociology electives	
Foreign Language	12
Electives	52
Total	183

Political Science-Education

Political science may be chosen as a second teaching field only. (See Social Studies Education for the major teaching field requirements in this area.) To be recommended for Ohio Provisional Certification in this teaching field, a student must also have completed the program of a related major teaching field. Forty-five credit hours are required, including thirty credit hours in political science and fifteen hours in other social sciences.

Prelaw

See Administrative Sciences and Finance, and Political Science.

Psychology

The major programs in psychology provide an intensive introduction to the basic problems of the science, their historical development, and the important practical issues to which they are related. Majors in psychology are encouraged to take a broad spectrum of courses in their undergraduate training. To this end, specific course requirements have been limited. Independent creative work is encouraged. Arrangements for independent research or reading can be made with the agreement of the student and the instructor.

Although no program leading to the Master of Arts or Master of Science degree is offered at the present time, such a program will be developed in the future. The numbering system for course listings indicates those courses in psychology which may be taken for graduate credit by students enrolled in other programs.

Majors in psychology have the option of obtaining either the Bachelor of Arts or the Bachelor of Science degree. For

*To meet special needs, related courses may be taken in other fields such as accountancy, business, religion, and speech.

a major in psychology leading to a Bachelor of Arts degree, departmental requirements are a minimum of 54 credit hours in psychology, of which 21 hours are in required courses; with the consent of the department, twelve of the remaining hours may be taken in a closely related field. The maximum number of credit hours in psychology which can be applied toward the degree is 61; however, this maximum can be extended to 70 with up to 9 credit hours of independent research. Additional requirements are nine hours of mathematics beyond the level attained on the mathematics placement examination *or* satisfactory completion of MTH 132 (Calculus I). One year of a foreign language is required.

Bachelor of Arts Degree
College of Science and Engineering

General Education Requirement	47
Departmental Requirements	54
PSY 111, 112, 201, 212	14
Psychology electives	40
Related Course Requirements	9
Mathematics	9
Foreign Language Requirement	12
Electives	61
Total	183

For a major in psychology leading to the Bachelor of Science degree, the student must fulfill all requirements for the Bachelor of Arts degree. In addition, the Bachelor of Science degree program requires satisfactory completion of MTH 132 (Calculus I) and twenty-four hours of credit in a *single* laboratory science. The 12-hour requirement for Area Two of the General Education Requirement may be included in the twenty-four hour total.

Bachelor of Science Degree
College of Science and Engineering

General Education Requirement (waive Area Two)	35
Departmental Requirements	54
PSY 111, 112, 201, 212	14
Psychology electives	40
Related Course Requirements	29
MTH 132 (Calculus I)	5
Laboratory science	24
Foreign Language Requirement	12
Electives	53
Total	183

Quantitative Business Analysis

See Administrative Sciences and Finance.

Rehabilitation Education

The Bachelor of Science degree with a major in rehabilitation education prepares students for employment in a variety of settings providing activities related to services for the disabled and disadvantaged. The student is also prepared for entrance into graduate programs in rehabilitation counseling or related areas.

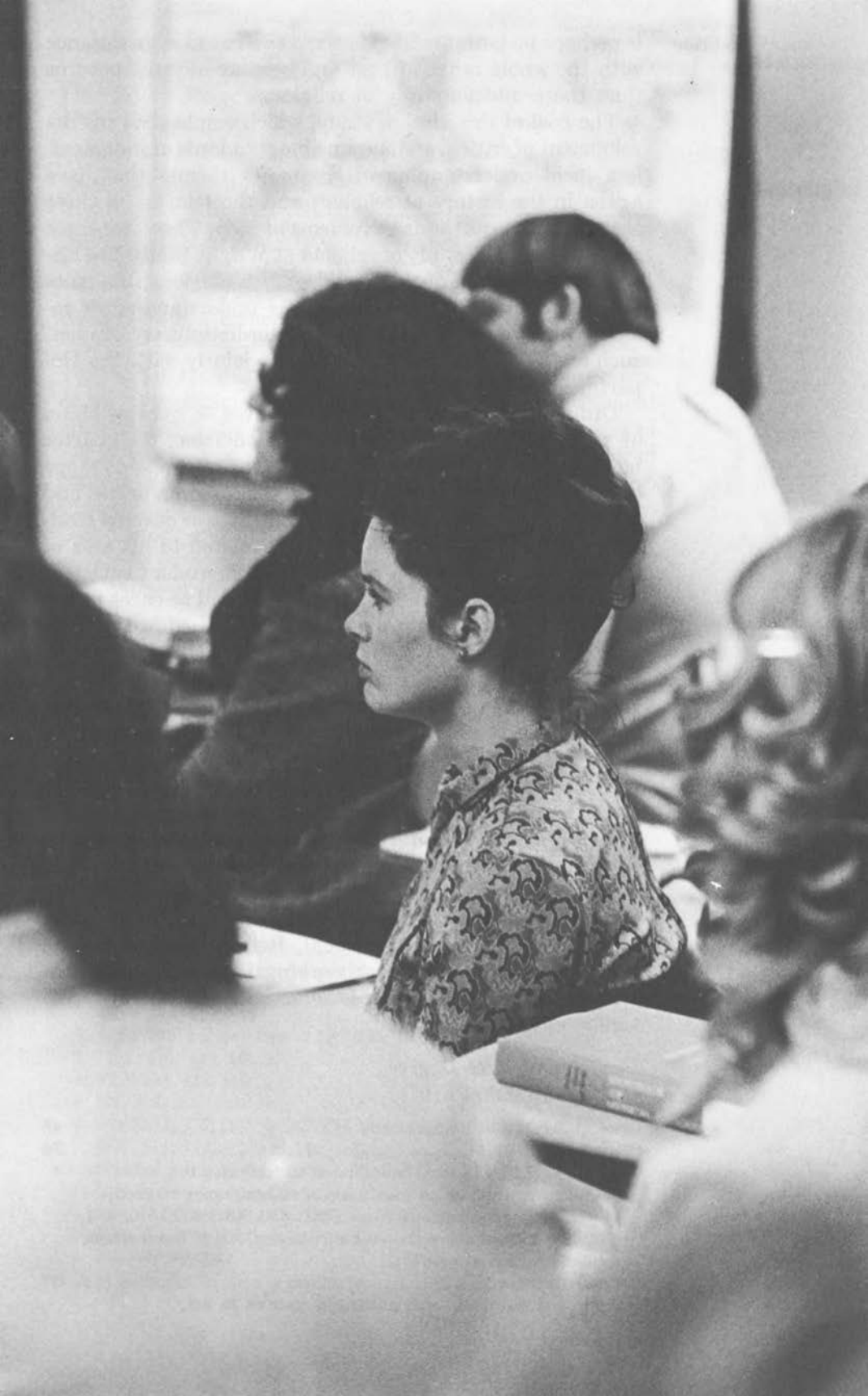
The program is flexible and can be individualized to suit the interests of the student. Because of the sequential character and prerequisites in both the professional and academic components of the program, the student is strongly advised to consult an adviser before registering.

Bachelor of Science Degree
College of Education

Professional Course Requirements	40
ED 270	3
ED 372, 373, 374	9
ED 445	3
ED 461	3
ED 472, 473, 474, 475	22
Related Requirements	92
PLS 111, 112, 113 (Gen. Ed., Area Three A)	9
ENG 111, 112 (Gen. Ed. Area One)	8
SOC 111, 112, 200, 330 or 332, 335, 440	18
SW 471	3
PSY 111, 112, 331, 325, 435, 443 (Gen. Ed., Area Three)	22
BIO 111, 112, 114, 301 (Gen. Ed., Area Two)	17
EC 201, 202, 203 or BUS 101, 102, 103	9
SPC 131	3
MTH 127 or equivalent	3
Additional General Education Requirement	9
Area Three B	9
Advised Electives	51
Total	192

Religion

The Department of Religion is devoted to a comprehensive and nonsectarian inquiry into religion as one of the significant areas of man's life and thought. Like philosophy, history, English, and other humanistic studies, this disciplined inquiry is one key to that understanding of man in his world which is essential to a sound liberal education. The religious factor in culture has been a powerful one. It is heavily embedded in most of the world's history, its literary documents, and its social institutions. Consequently there



is perhaps no better mode of access to a broad acquaintance with the whole range of past and present human concerns than the academic study of religion.

The goal of this kind of study, which emphasizes the development of critical and responsible standards of judgment, is a lucid understanding of the major themes that have arisen in the history of religions and the relation of these themes to the continuing problems of man. There are three main areas in the study of religion at Wright State: the history and literature of the world's major religions; the more general problems which arise in the understanding of religion wherever it is found; and interdisciplinary studies, such as "Evolution," which is taught jointly with the Department of Biological Sciences.

Ordinarily, a major in religion involves 36 quarter hours of work within the department. In addition, 27 quarter hours of related courses are to be selected from a wide range of disciplines which are indicated in the program below, and the student will be required to demonstrate or develop reading proficiency in a foreign language related to his area of special interest. The aim is to allow each student sufficient room to explore his interests in the arts and sciences to the fullest, and so to obtain a genuinely liberal education.

Any vocation that might follow from a good arts-and-science education is possible for the major in religion. For example, professions such as law, the ministry, medicine, and fields such as government and social work, business or teaching are a few of the possibilities. Normally, the technical training required for most of these fields would come after completion of the baccalaureate program.

The Department of Religion encourages superior academic work through full participation in the university's honors programs. Special seminars and discussion sections, departmental reading courses, and other opportunities are available to the superior student. Relatively small classes also make possible a closer working relationship between student and professor than is sometimes possible in a university of this size.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirement 48
Departmental Unit 36
REL 111, 112, 113 may be included to comprise the 36-hour requirement. A maximum of 12 hours may be credited toward this requirement from REL 450, 451, 452, 470, 481, 482, 483, with no more than 6 hours in any one of these course sequences (including 470).
Related Courses 27
Approved electives from advanced courses in art,

classics, English, history, philosophy, political science, psychology, and sociology	
Electives	72
Total	183

Slow Learner Education

See Elementary Education.

Social Studies-Education

The social studies comprehensive program prepares students to teach integrated social studies and all component areas in which the student has at least 18 quarter hours of course work. The program consists of basic and advanced courses in American history, world history, political science, economics, sociology, and geography; advanced courses in U.S. history and non-U.S. history; and a concentration of advanced courses in one or more social science field.

Because of the sequential character and prerequisites in both the professional and academic components of education programs, the student is strongly advised to consult an adviser before registering.

Bachelor of Science in Education Degree
College of Education

Professional Education Requirements		33-36
ED 202, 203 (Gen. Ed., Area Three — 1 course)	6	
ED 439	4	
ED 422, 429	15-18	
ED 440, 464	8	
Related Requirements		15
PSY 111, 112 (Gen. Ed., Area Three — 2 courses)	6	
Mathematics*	3	
SPC 135, 136	6	
Social Studies Major Requirements		105
A. Basic sequences as follows:		54
1. HST 111, 112, 113	9	
2. HST 123 and any two of 120, 121, 122	9	
3. GEO 101, 102, 103	9	
4. PLS 111, 112, 113	9	
5. EC 201, 202, 203	9	
6. SOC 111, 112, 200; *or* ANTH 140, 141, 142; *or* SOC 111, 112, ANTH 140	9	
B. Advanced work as follows:		36
1. U.S. history	3	
2. Non-U.S. history	3	
3. Non-Western history	3	
4. History elective	3	

*May be waived with proficiency examination.

5. 3 credit hours work in each of the following: economics, geography, political science, and sociology 12
6. 12 credit hours taken in one of the above subject areas *or* distributed among the areas to complete 18 hours in selected areas for certification 12

C. Electives for a concentration in *one* of the above areas 15
Additional General Education Requirements 29
Area One 8
Area Two 12
Area Three B 9
Electives 7-10
Total 192

Social Work

Schools of social work advise that the student who plans to take professional training concentrate in social work with additional work in sociology and other social sciences, and that he have as broad an education as possible. The social work major is designed to: (a) prepare the student for graduate professional education in social work; (b) prepare the student to qualify for social work and social welfare positions for which full professional education is not required; and (c) provide sufficient knowledge about social welfare programs and social work activities so that the student is able to think critically about problems, issues, and approaches to social work and social welfare in his community.

Wright State University has constituent membership in the Council on Social Work Education, thus ranking in the top ten percent of undergraduate social work programs in the nation.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirement 48
Departmental Unit 45
SOC 111, 112 6
SW 275, 385, 386, 387, 471, 476; SOC 406, 407 24
SW 485, 486, 487 12-18
Sociology-anthropology electives; ANTH 140 is strongly recommended 3-9
Related Courses 27
Nine hours each in psychology, political science, or economics
Language Requirement 12
One year of a foreign language
Electives 51
Total 183

Sociology

The major concentration in sociology provides an extensive understanding of the nature, structure, and function of society and group behavior. Courses are planned to provide coverage in depth of the field. Flexible elective offerings allow the student to adapt the major concentration in sociology to his particular interests and his plans for the future.

In addition to the general requirement of Sociology 111 and 112, students are advised to take Sociology 140, although this is not a requirement.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirement	48
Departmental Unit	40
SOC 111, 112, 400, 402, 406, 407	18
Sociology electives	22
Related Courses	24
Electives from anthropology, economics, political science, psychology, history, and social work	
Language Requirement	12
One year of a foreign language	
Electives	59
Total	183

Sociology-Education

Sociology-education may be chosen as a second teaching field only. (See Social Studies Education for the major teaching field requirements in this area.) To be recommended for Ohio Provisional Certification in this teaching field, a student must also have completed the program of a related major teaching field. Forty-five credit hours are required, including thirty credit hours in sociology and fifteen hours in other social sciences.

Spanish

See Modern Languages.

Speech and Theatre-Education

A student may prepare to teach speech in the secondary

schools (grades 7-12) by completing the following program. It is strongly recommended that a student choose a supporting second teaching field or a second major teaching field. The speech education major is expected to participate in the cocurricular clubs and activities of the Department of Speech and Theatre, such as forensics, speaker's bureau, and play production.

Because of the sequential character and prerequisites in both the professional and academic components of the program, the student is strongly advised to consult an adviser before registering.

Bachelor of Science in Education Degree
College of Education

Professional Education Requirements		32-35
ED 202, 203 (Gen. Ed., Area Three A — 1 course)	6	
ED 333	3	
ED 422, 429	15-18	
ED 440, 464	8	
Related Requirements		9
PSY 111, 112 (Gen. Ed., Area Three A — 2 courses)	6	
Mathematics*	3	
Speech and Theatre Major Requirements		51
SPC 135, 136	6	
These courses in the following areas: (Gen. Ed., Area Three B — 3 courses)	45	
(1) SPC 111 or 112		
(2) SPC 127, 128		
(3) SPC 101, 102, 144, 244, 220, 320, 350, 352		
(4) SPC 131, 133, 232, 331		
Additional General Education Requirements		29
Area One	8	
Area Two	12	
Area Three A or B	9	
Electives (second or supporting field suggested)		71-74
Total		192

SPEECH AND THEATRE AS A SECOND TEACHING FIELD

Forty-five credit hours required, including SPC 135 and 136 and courses from each of the areas listed in the above program.

Speech Communication

The major in Speech Communication in the College of Liberal Arts is designed for the student who desires to specialize in rhetoric and public address or in communication theory.

The speech communication major can easily qualify himself for state certification to teach at the secondary level;

*May be waived with proficiency examination.

he must, like the speech education major, take certain required courses in the College of Education.

The speech communication major is expected to participate in cocurricular clubs and activities.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirements	47
Departmental Unit	45
SPC 135, 136, 223, 232, 332, 451	21
Additional electives in major (minimum)	24
Related Courses	24
Language Requirement	21
Two years of one foreign language or its equivalent.	
Electives	46
Total (including 30 hours of 300-level courses)	183

Systems Engineering

See Engineering.

Technically Combined Curriculum

See Administrative Science and Finance.

Theatre

Students majoring in theatre combine the advantages of a liberal education with preparation which guides the student toward a professional career in one or more areas of theatre. The theatre student should maintain a balance between theory and practice and between the various arts of the theatre. The student gains insight and perspective through his studies in art, history, literature, music, philosophy, psychology, religion, science, and sociology.

Majors in theatre are expected to achieve basic proficiency in production techniques and skills. They must also demonstrate satisfactory mastery of fundamentals of vocal and physical action consistent with their career goals and objectives. Faculty will periodically evaluate the progress of each student and will meet with the student in conference.

All theatre majors are required to take TH 101, 102, 108, 110 (6 hours), 140, 144, 220, 244, 350, 352, and 394. Related courses in the areas of art, dance, dramatic literature, film, music, speech communication, and television, will be chosen from a department-approved list with the consent of the student's adviser. The theatre major is required to participate in the production activities of the University The-

atre as a supplement to and extension of classroom experiences.

Students should plan their undergraduate programs with graduate study in mind. Majors who wish to achieve state certification to teach on the secondary level may do so by taking the required professional courses in the College of Education.

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirements	47
Departmental Unit	54
TH 101, 102, 108, 110 (6 hours), 140, 144, 220, 244, 350, 352, 390 are the required courses	36
Additional electives in major (minimum)	18
Related Courses	36
Elective hours in fields related to the major's special interests to be chosen from a department-approved list	
Language Requirement	12
One year of a foreign language or its equivalent	
Electives	34
Total	183

Urban Studies

Urban studies is an undergraduate interdisciplinary program in the College of Liberal Arts. The objective of this program is to provide students the opportunity to acquire a liberal education in the field of urban studies, and to prepare some students for immediate junior or entrance-level positions in both local government and selected community agencies. The program may also be attractive to students preparing to take graduate work in such fields as urban planning and public administration.

To graduate with a Bachelor of Arts in urban studies a student must complete the following requirements:

(1) Liberal Arts 211 and 411.
(2) Two courses from each of the following departmental offerings: Geography 226, 271, 343; History 215, 474, 475; Political Science 225, 345, 425; Sociology 200, 230, 425. (24 hours total)
(3) In addition to the courses listed in "2" above, an additional 24 hours from the list of courses approved for an urban studies major.
(4) Six hours of internship with a local community agency in the junior or senior year.
(5) Proficiency in college statistics at the introductory level, or in a single foreign language equivalent to three quarters of such work at the college level.

(6) A minimum of 36 hours in any department that the student wishes to declare as his "field of concentration." Courses taken to fulfill other requirements of this major may also be applied towards the 36 hours required in a "field of concentration."

The adviser for an urban studies major will normally be appointed by the department in which the student has declared a "field of concentration."

Bachelor of Arts Degree
College of Liberal Arts

General Education Requirement	47
Departmental unit	60
LA 211 and 411	6
Core courses (see "2" above)	24
Related urban courses	24
Internship	6
Foreign language or statistics	12
Electives	64
Total	183

Courses of Instruction

Courses designated by consecutive numbers are related courses; those which must be taken in sequence are so indicated in the course description.

The number which follows the hyphen indicates the credit hours per quarter for that course. In the case of renumbered courses, course numbers given in earlier catalogs are indicated in parentheses following the present number.

In order to enroll in courses numbered 500 or higher, students must be admitted to the Division of Graduate Studies.

While every effort is made to keep the course descriptions up to date, inevitably changes occur after publication deadlines. Every student is therefore urged to consult the current list of courses available in departmental offices.

Course Numbering System

0-99	Remedial precollege level course.
100-299	Lower division courses intended for undergraduate credit only. The first digit indicates the general level of the course: 1 for a first year course, 2 for a second year course.
300-499	Upper division courses carrying undergraduate credit only. The first digit indicates the general level of the course: 3 for a third year course, 4 for a fourth year course. Courses in this category which are acceptable for graduate credit will carry an alternate number in which the

first digit only is changed to a 5 or a 6 according to the definitions below.

500-599	Courses which carry graduate credit *only in a major field different from that of the department offering the course.* Most such courses will be alternate designations of courses normally numbered 300-499.
600-699	Courses which carry graduate credit in any major field, and which have alternate designations in which the first digit is a 3 or 4 when taken for undergraduate credit.
700-999	Courses intended for graduate credit only. (Unclassified students may, with the approval of the department offering the course, register for undergraduate credit in courses numbered 700-799.)

Accountancy (ACC)

103-3 Income Tax Planning. Individual and business decisions involving federal income taxes. An elective course for students who do not plan to major in accounting.

201-3, 202-3, 203-3 Accounting Concepts and Principles I, II, and III. An introduction to accounting for business enterprises including the preparation and analysis of financial statements and reports for managers and other users. Must be taken in sequence.

300-3 (formerly 301-3) Accounting for Managerial Analysis. Analysis and interpretation of accounting information to management in the functions of planning, control, and decision making. Not open to accountancy majors. Prerequisite: ACC 203.

304-3, 305-3 (formerly 302-3, 303-3) Financial Accounting I, II. The development of financial accounting theory and its application to complex problems in the valuation of balance sheet accounts, in the determination of net income, and in the preparation of financial statements. Courses must be taken in sequence. Prerequisite: ACC 203.

306-3 (formerly 311-3) Financial Accounting III. A study of consolidated statements, branch accounting, and fund accounting. In addition, comparative financial statements and accounting for foreign operations are included. Prerequisite: ACC 305.

321-3 Management Accounting I. Concepts, techniques, and detailed accounting procedures for the manufacturing firm. Prerequisite: ACC 203.

322-3 Management Accounting II. The application of cost accounting concepts and techniques to complex problems in manufacturing accounting and to other areas including distribution costs and research and developments costs. Prerequisite: ACC 321.

331-3 Income Tax Accounting I. The history, theory, and basic tax structure pertaining to individuals and business. Prerequisite: ACC 203.

332-3 Income Tax Accounting II. Corporate, partnership, estate, gift, social security, and other Federal taxes. Prerequisite: ACC 331.

407-3 (formerly 312-3) Financial Accounting IV. A comprehensive study of partnership and problems arising in combination of business units. Covers purchase versus pooling of interest, intercompany adjustments of operating results, and financial position and other matters involved in the parent-subsidiary relationship. Prerequisite: ACC 306.

411-3 Accounting Systems I. The fundamental concepts of information, communication, and systems which form the framework for the design of data processing and accounting systems. Prerequisite: ACC 305 and 321.

412-3 Accounting Systems II. The application of accounting systems in handling principal business transactions and situations. Prerequisite: ACC 411.

421-3 Auditing I. An introduction to the principles, standards, and procedures involved in the conduct of an audit by the independent accountant. Prerequisite: ACC 306.

422-3 Auditing II. The application of auditing techniques with emphasis on the audit report and other special reporting problems. Consideration of management services and the auditor's responsibility to third parties. Prerequisite: ACC 421.

431-3 Governmental Accounting. The application of accounting principles to fund accounting for government units with consideration given to institutional accounting. Prerequisite: ACC 305 and 321.

477-1 to 3 Special Studies in Accounting.

481-6 Internship in Accounting. One-quarter, faculty supervised internship in the areas of public, industrial, or governmental accounting. Semi-monthly seminars and reports required for completion of course. Prerequisite: approval of Committee on Accounting Internship.

499-3 Senior Seminar. Readings in and discussion of recent accounting literature. Prerequisite: accounting major with senior standing.

Graduate Courses

621-3, 622-3 Graduate Survey of Accounting I and II.

711-3 Financial Accounting Concepts I.

712-3 Financial Accounting Concepts II.

721-3 Federal Income Tax Accounting.

722-3 Auditing Theory.

741-3 Managerial Accounting.

752-3 Business Information Systems.

753-3 International Accounting.

761-3 Seminar in Financial Accounting Theory.

762-3 Seminar in Income Tax Planning and Research.

763-3 Seminar in Managerial Accounting.

770-4 Accounting Concepts and Uses I.

771-4 Accounting Concepts and Uses II.

772-4 Seminar in Governmental Accounting.

781-3 Special Studies in Accounting.

799-6 to 9 Thesis.

Anthropology

See Sociology.

Art (ART)

101-4, 102-4, 103-4 Foundations of Art. Introduction to studio activity. Laboratory experience, with emphasis on perception, visual organization, and color, involving a variety of media. Must be taken in sequence.

111-3 Ideas in Western Art: Painting and Sculpture. A study of form and meaning in painting and sculpture from prehistoric to modern times. No sequence requirements. (Formerly listed as Fine Arts 112.)

112-3 Ideas in Western Art: Architecture. The development of architecture in terms of formal qualities, materials, techniques, and function from ancient to modern times. No sequence requirements. (Formerly listed as Fine Arts 113.)

141-3, 142-3 History of Western Art. A survey of major art forms from pre-history to the Renaissance.

221-5, 222-5, 223-5 Beginning Painting. Painting from still-life and figure, emphasizing the use of color and drawing in visual organization. Prerequisite: ART 101-102-103. Must be taken in sequence.

231-2, 232-2, 233-2 Lettering. A study of calligraphy and the development of type forms. Adaptation of hand lettering to modern uses. Students might also be interested in LETTERING AND CALLIGRAPHY (A 207-A 208) offered at the Dayton Art Institute. Must be taken in sequence.

251-4 Life Drawing. Drawing from the human figure, using a variety of media. Discussion of drawing as related to major styles. Prerequisite: ART 222.

261-4 Beginning Sculpture. An introduction to the fundamentals of sculpture, emphasizing basic forming processes and materials. Prerequisite: ART 101-102-103.

301-3, 302-3, 303-3 Design. An introduction to the theory, methods and practices of design with an emphasis upon methods of inquiry, techniques, and procedures used in design problem solving. Prerequisite: ART 223.

311-3, 312-3, 313-3 Graphic Arts. The basic tools, methods, and materials of printmaking. Prerequisite: ART 251. Must be taken in sequence.

321-5, 322-5, 323-5 Advanced Painting. Emphasis on the principles of abstraction in pictorial organization. Attention to the relationship of subject matter and abstraction as related to contemporary and traditional approaches. Prerequisite: ART 223. Must be taken in sequence.

351-4 Advanced Drawing. Drawing from the figure emphasizing perceptual and conceptual attitudes in developing visual relationships.

381-3, 382-3, 383-3 Junior Seminar. A special studies course offered as an elective for qualified students of junior standing who wish to do intensive individual work with faculty supervision in a studio subject of the student's choice.

411-3, 412-3, 413-3 Graphic Arts. Woodcuts, etchings, and related processes explored by advanced students as a means for individual expression. Prerequisite: ART 311-312-313 and 351. Must be taken in sequence.

421-5, 422-5, 423-5 Advanced Painting. Continued emphasis on pictorial organization with increased attention to the individual student's personal imagery. Prerequisite: ART 321-322-323. Must be taken in sequence.

445-3 **Renaissance and Baroque Art.** The art of the Renaissance, Mannerist, and Baroque periods in Western Europe (1300-1700).

446-3 **Rococco to Post-Impressionism.** The art of the Rococco, Neo-Classic, Naturalist, and Impressionist periods in Western Europe and America (1700-1800).

447-3 **Modern Art.** A study of the major achievements in painting, sculpture and architecture from Post-Impressionism to the present (1800-1970).

448-3 **Contemporary American Art.** A study of significant developments in twentieth-century American painting, sculpture, and architecture, with emphasis on art since 1945.

451-4 **Advanced Drawing.** Exploration of the structure and interrelationships of visual form in drawing, painting, and sculpture. Principal historical modes of drawing will be examined.

481-3, 482-3, 483-3 **Senior Seminar.** A special studies course offered as an elective for qualified students of senior standing who wish to do intensive individual work with faculty supervision in a studio subject of the student's choice.

Art Education (AED)

111-3, 112-3, 113-3 **The Individual and the Creative Process.** (For art education majors) 111: Basic course providing opportunities for student's development and awareness of himself as an individual responding to his environment. 112: Methods and disciplines of creating with materials and tools. 113: Continued opportunities for student work with art materials, providing experiences for individual awareness of the creative process. Must be taken in sequence.

114-4 **Exploration of Lineal Concepts.** A combination studio and seminar in drawing and two-dimensional materials. Studio work will consist of discovering ways of expressing environmental concepts through pencil, crayon, inks, opaque paints, and other materials common to the public school. Seminar will consist of discussions of motivational techniques for promoting two-dimensional work. Methods of drawing with elemental tools that correspond to child growth and development will be stressed. Prerequisite: Fine Arts 102, or 3 hours drawing.

223-3 **Crafts for Teachers.** Creative problems in paper, wood, clay, fibers, and metal for the elementary grades. Participation and observation expected during this course. Prerequisite: AED 111, 112, 113, or 3 quarters design, or AED 231, or consent of instructor.

224-4 **Ceramics I.** Rudiments of ceramic design, methods of forming, wheel throwing, firing, glazing, and decoration. Prerequisite: An introductory studio design course.

225-4 **Ceramics II.** Advanced ceramic design, forming, wheel throwing, glaze calculations, decoration, and a high degree of experimental involvement. Prerequisite: AED 224.

226-3 **Modeling.** Introductory work in the construction of three-dimensional forms, the sculptural potentials of clay and other plastic materials.

231-3 **The Individual and the Creative Process.** (For elementary education majors) A basic course providing experiences for the elementary teacher's awareness of himself as an individual responding to his environment, and for the recognition of the role of art in our culture. Included are methods and disciplines of creating with materials and tools. Drawing and painting are included.

324-4 **Enameling I.** Introduction to the basic methods and processes of application and the fusing of ground glass to metals. Prerequisite: An introductory studio design course, and AED 223.

325-4 Enameling II. Advanced study of the special methods and techniques of application and the fusing of ground glass to metals. Prerequisite: AED 324.

330-4 Art in the Public School. Understanding the needs of the child in art expression; study of teaching techniques, materials, and curriculum organization; in-field work with children prior to student teaching. Prerequisite: AED 431 or AED 331, and at least a minor in the field, or consent of chairman.

331-3 The Child and the Creative Process. (For elementary education majors) Developing an understanding of child growth and development through creative expression. Experiences in drawing and painting are emphasized. Prerequisite: AED 231 or AES 223, and ED 203 or equivalent.

332-3 School Exhibits and Displays. Lettering and design problems as related to posters, display, and scenery. Individual and group techniques as related to the school program. Prerequisite: AED 111-112-113, or 3 quarters design; AED 231, or consent of instructor.

411-4 (see also 611-4) Design: Process and Material. Advanced course in two- and three-dimensional design problems invloving a wide range of techniques and materials related to teaching. Personal involvement in experimental approaches related to course problems. Prerequisite: AED 111, 112, 113, or 3 quarters design; AED 231 or equivalent, and eight advanced credit hours in art education.

412-4 (see also 612-4) Interior Design. Problems to help the public school art teacher develop an understanding of art appreciation for contemporary interior design. Areas such as furniture, fabrics, and interior architecture explored. Prerequisite: 16 credit hours in art education.

420-3, 421-3, 422-3 (see also 620-3, 621-3, 622-3) Art Metal, Jewelry I, Jewelry II. 420: Development of skill in the manipulation of materials and tools for metal work. Creative problems in contemporary functional design. **421:** Creative designing and making of jewelry. Technique and craftsmanship for various materials. **422:** Advanced problems in the design and making of jewelry forms. Prerequisite: 9 hours design.

423-3, 424-3, 425-3 (see also 623-3, 624-3, 625-3) General Fabrics, Weaving, Textiles. 423: Introduction to fabrics as an art form. Beginning techniques of batik, weaving, stitchery, silkscreen printing. **424:** Use of loom and other hand techniques in weaving. Experimental approaches explored in the completion of original ideas. **425:** Methods of silkscreen printing on fabrics; emphasis on silkscreen as it may be used in the public school program; analysis of textile design in contemporary living. Must be taken in sequence. Prerequisite: AED 111, 2, 3 or 9 hours design.

426-3 (see also 626-3) Fibers and Fabrics. A study of the various methods and procedures to use in working with stitchery and appliqued forms; exploration of ways to work with flat and stitched fabrics that lead to wall hangings and other fabric art forms. Prerequisite: AED 111, 112, 113 or 9 hours design.

427-3 (see also 627-3) Sculpture in the Public School. Three-dimensional expression providing an overall view of sculpture and its relationship to the student and the creative process. Studio work in wire, clay, casting, plaster, wood, stone, and wax. Prerequisite: AED 111, 112, 113 or 9 hours design, and AED 223.

428-4 (see also 628-4) Pupil Expression Through Mural Painting. The development of individual creative expression through mural painting; the application of the mural technique to the public school program. Prerequisite: 16 credit hours of art education, four of which must be advanced.

429-4 (see also 629-4) Workshop in Art Education. A workshop dealing with problems, processes, and techniques for the development of

art activities in the elementary and secondary school. Work consists of the development of craft processes concerned with suitable projects for classroom work and public art education curricula. Taught during spring and/or summer sessions only.

431-3 The Child and the Creative Process. (For art education majors) Developing an understanding of child growth and development through creative expression, with emphasis on the functions and procedures of art in the classroom. Experiences in drawing and painting are emphasized. Prerequisite: AED 223 and ED 203 or equivalent.

432-3 (see also 632-3) The Adolescent and the Creative Process. Fundamental course to help the prospective teacher to become aware of the creative growth and development of the adolescent. Laboratory experiences include problems of implementing a secondary art curriculum. Prerequisite: AED 431, or AED 331 or consent of instructor.

433-4 (see also 633-4) Problems for the Elementary School. Integration of art in the general public school program. Discussions, library research, and individual problems. Prerequisite: 16 credit hours of art education, eight of which must be advanced.

434-4 (see also 634-4) Problems for the Secondary School. Integration of art in the general public school program. Discussions, library research, and individual problems. Prereguisite: 16 credit hours of art education, eight of which must be advanced.

435-4 (see also 635-4) International Art Education. A study of creative expression as it is seen in various cultures, with emphasis on contemporary issues in art education. A course to provide the teacher with a better understanding of art education on an international scope. Stress is given to method and procedures of implementing creative expression in various cultures, and understanding of these cultures is gained through their creative efforts. Prerequisite: 16 hours art education, 8 of which must be advanced.

436-4, 437-4 (see also 636-4, 637-4) Minor Problems in Art Education. Individual problems in specified areas for the purpose of intense and concentrated work in one or more media; the development of a proficiency in one or more craft areas. Prerequisite: 16 hours of art education advanced crafts.

440-1 to 3 Workshop/Field Trip in Art Education. A one-week workshop/field trip planned to survey the visual and performing arts. Visits to museums, galleries, and commercial sources of contemporary design and architecture. Participants will be required to submit a written and/or visual evaluation of the places visited. Prerequisite: one year of college or equivalent.

441-3 Art Appreciation for the Public School. Understanding the influences and the interaction of the creative arts in our present culture. Emphasis on the importance of developing appreciation in the public school and its application to teaching. Prerequisite: 16 credit hours of art education, eight advanced.

Graduate Courses

611-4 Design: Process and Material.

612-4 Interior Design.

620-3, 621-3 622-3 Art Metal, Jewelry I, Jewelry II.

623-3, 624-3, 625-3 General Fabrics, Weaving Textiles.

626-3 Fibers and Fabrics.

627-3 Sculpture in the Public School.

628-4 Pupil Expression Through Mural Painting.

629-4 Workshop in Art Education.

632-3 The Adolescent and the Creative Process.

633-4 Problems for the Elementary School.

634-4 Problems for the Secondary School.

635-4 International Art Education.
636-4, 637-4 Minor Problems in Art Education.
640-1 to 3 Workshop/Field Trip in Art Education.
641-3 Art Appreciation for the Public School.
721-3 to 5 Graduate Study in Crafts.
731-4 Development of Art Education.
732-4 Creative and Nonverbal Communication.
733-4 Art Education and the Special Student.
734-4 Art Education and Personality.
751-4 Current Problems in Art Education.
752-3 Research in Art Education.
821-4 to 16 Special Problems in Art Education.
831-4 Supervised Art in the Public Schools.
899-3 to 9 Thesis.

Biological Sciences (BIO)

The sequence 111, 112, 113 is primarily designed to interest students majoring in areas other than biology. The sequence 111, 112, 114 should be elected by biology majors and those intending to take advanced courses in biology.

111-4 Principles of Biology — Ecology. An introduction to the basic concepts of biology. Topics include environment, ecology, and the diversity of life.

112-4 Principles of Biology — Genetics and Evolution. An introduction to the basic concepts of biology. Topics include genetics, evolution, and the molecular and cellular basis for the unity of life.

113-4 The Human as an Organism. An introduction to biology at the organismic and systematic level with emphasis on man. Topics will reflect contemporary interests and will usually include man as an evolved species, nutrition, disease and reproduction.

114-4 Organismic Biology. An introduction to the structure and function of plants and animals.

Core Courses

Courses from 210 through 316 constitute the departmental core required of all majors. BIO 111-112-114 or equivalent with a minimum grade average of 2.0 or departmental approval are required for admission to core courses.

210-3 Cell Biology. Elements of cell structure with emphasis on functional interrelationships. Prerequisite: BIO 111-112-114, CHM 113, or consent of instructor. 2 lect.

211-2 Histology. An introduction to the histological analysis of function. Basic preparative techniques and an understanding of tissue organization will be stressed. Prerequisite: BIO 111-112-114. 2 lab.

212-3 Genetics. The function of the gene and its role in the quantitative, physiological, and population genetics of plants and animals. Prerequisite: BIO 111-112-114. 2 lect.

213-2 Microbiology. Morphology, cultivation, and biochemical activity of microorganisms. Prerequisite: BIO 111-112-114, CHM 113, or consent of instructor. 2 lect-lab.

214-3 Developmental Biology. Elements of the reproductive processes in plants and animals with emphasis on embryological development and origin of tissues. Prerequisite: BIO 210, 211. Corequisite: BIO 215. 2 lect.

215-2 Developmental Biology Laboratory. Embryology of plants and animals including preceding reproductive processes. Corequisite: BIO 214. 2 lab.

310-3 Molecular Biology. The molecular basis of the living state. Particular emphasis is placed on the molecular mechanisms of inheritance and the genetic control of metabolism. Prerequisite: BIO 214, 215 and CHM 213, or consent of instructor. 2 lect.

311-2 Molecular Biology Laboratory. Isolation, characterization, and quantitation of macromolecules, introductory enzymology, mechanisms of the genetic control of metabolism. Corequisite: BIO 310. 2 lab.

312-3 Animal Biology. Basic adaptive mechanisms and their coordination in the activities of the Metazoa. Prerequisite: BIO 214. 2 lect.

313-2 Animal Biology Laboratory. Anatomy and physiology of the Metazoa. The functional correlates of multicellularity and environment will be stressed. Corequisite: BIO 312. 2 lab.

314-3 Plant Biology. Structure, function, growth, development, and ecology of plants. Prerequisite: BI0 310, 311. Corequisite: BIO 315. 2 lect.

315-2 Plant Biology Laboratory. A laboratory course designed to illustrate the material of BIO 314. Corequisite: BIO 314. 2 lab.

316-4 Environmental Biology. An introduction to ecology with emphasis on the organism's interaction with the environment. Prerequisite: BIO 313, 315.

Additional Courses

301-5 Physiology and Health. Basic structure and function of the human with considerations of health, disease, and abnormalities. Prerequisite: BIO 111, 112, 114 or consent of instructor. 2 lect., 1 lab.

370-3 Human Nutrition. Nutrition will be presented as an integrated science emphasizing biochemical and physiological principles. General topics will include nutritional energetics, specific nutrients, and nutrition and physiology. The last lectures will relate basic concepts to clinical situations and to nutritional management of specific disease conditions.

401-3 Topics in Modern Biology. Consideration of current thought in the interpretation of biological phenomena. This course is designed for secondary school teachers of biology and for science majors. Cannot be used for credit toward the Bachelor of Science or Bachelor of Arts degrees in biology. 2 lect.

411-5 The Aquatic Environment. An introduction to limnology. A field and laboratory course concerned with the physical, chemical, and biological factors which determine biological productivity in natural waters. Recommended preparation: BIO 316 or equivalent or consent of instructor. 2 lect., 2 lab., and field trips.

412-5 Aquatic Communities. An analysis of the functional relationships of organisms with the aquatic environment with special emphasis on species interactions. Recommended preparation: BIO 316 or equivalent. 2 lect., 2 lab., and field trips.

413-5 Biological Problems of Water Pollution. An introduction to the biological aspects of water pollution. Lectures, discussions, laboratories, and field trips will cover the various types of pollutants and their impact on aquatic life. 2 lect., 2 lab., and required field trips. Recommended preparation: BIO 411 or consent of instructor.

417-3 Evolution. (Taught jointly with the Religion Department: see REL 417.) An introduction to the biological, philosophical, theological, and ethical aspects of the concept of evolution. Prerequisite: consent of instructor.

421-3 Biochemistry I. Chemistry of biological compounds and in-

troduction to enzymes. Prerequisite: organic chemistry or consent of instructor. 2 lect.

422-2 Laboratory for Biochemistry I. Quantitative techniques in biochemistry, chemical and instrumental methodology. 1 lab. 1 rec. Corequisite: BIO 421. May be taken separately with consent of instructor.

423-3 Biochemistry II. Intermediary metabolism of carbohydrates, proteins, nucleic acids, and lipids. Prerequisite: BIO 421. 2 lect.

424-2 Laboratory for Biochemistry II. Properties of enzymes, enzyme catalyzed reactions, and application of isotopes to the study of metabolism. Corequisite: BIO 423. May be taken separately with consent of instructor. 1 lab. 1 rec.

426-4 Pathogenic Microbiology. A study of micro-organisms pathogenic for man and animals with emphasis on mechanisms of infection, resistance, and laboratory diagnosis. Prerequisite: BIO 213 and consent of instructor. 1 lect. 2 lab.

427-3 General Microbiology. A study of bacteria, yeasts, molds and viruses with emphasis on microbial diversity and the microbiology of special environments. Prerequisite: BIO 311 or consent of instructor.

432-3 Plant Biochemistry. A detailed study of the biochemistry of photosynthesis, respiration, and other metabolic and biosynthetic processes in plants. Prerequisite: BIO 421 and 423.

433-2 Laboratory for Plant Biochemistry. Experiments will be designed to follow the subject matter sequence of BIO 432. 1 lab. Corequisite: BIO 432 or consent of instructor.

452-3 Advanced Genetics. A study of basic concepts of genetic control of form, function, and change in biological systems with emphasis on microbial, developmental, and biochemical genetics. Prerequisite: BIO 212, 310, or consent of instructor. 2 lect.

453-2 Advanced Genetics Laboratory. A laboratory course designed to illustrate some aspects of microbial, biochemical, and developmental genetics. Prerequisite: BIO 452 or concurrent registration. 2 lab.

460-3 Population Genetics. A consideration of the principles controlling the genetic constitution of population and species. Prerequisite: Introductory Genetics.

472-5 The Invertebrates. The morphology, development, physiology, and evolutionary relationships of major invertebrate groups. 2 lect. 2 lab.

473-1 Marine Field Trip. A week-long field trip to selected coastal locations. A variety of habitats will be visited and organisms collected in their natural environment. Recommended preparation BIO 472 or equivalent and permission of instructor. A special fee is applicable. This course may be repeated.

474-5 Ecological Physiology of Aquatic Animals. A study of the physical and chemical adjustment, tolerance, and acclimation of organisms to the aquatic habitat. Recommended preparation: BIO 312 and 411 or equivalent. 1 lect., 3 lab.

478-4 Animal Behavior. The physiology, phylogeny, and ontogeny of behavior. Also listed as 478 Animal Behavior in the course offerings of the Psychology department. Prerequisite are either PSY 111-112 and 211, or BIO 111-112-113 and 312, 313, and consent of instructors. 2 lect. 2 disc.

483-3 Comparative Vertebrate Physiology. Mechanisms of organic maintenance considered as examples of the application of control theory. Prerequisite: BIO 312. 2 lect. 1 lab.

484-2 Laboratory for Comparative Vertebrate Physiology. Corequisite: BIO 483 or consent of instructor.

488-1 Independent Reading. Prerequisite: Junior standing and departmental approval. Graded as pass or unsatisfactory.

492-1 Senior Seminar. Literature survey and discussion of selected topics. Graded as pass or unsatisfactory.

495-1 to 3 Senior Honors Research. Prerequisite: Acceptance into the Biology Honors Program.

499-1 Special Problems in Biology. Prerequisite: 2.2 cumulative grade point average and consent of department. A maximum of 4 credits is applicable toward degree requirements. Graded as pass or unsatisfactory.

Graduate Courses

612-5 Aquatic Communities.
613-5 Biological Problems of Water Pollution.
617-3 Evolution
621-3 Biochemistry I
622-2 Laboratory for Biochemistry I
623-3 Biochemistry II
624-2 Laboratory for Biochemistry II
626-4 Pathogenic Microbiology
627-3 General Microbiology
632-3 Plant Biochemistry.
633-2 Laboratory for Plant Biochemistry.
652-3 Advanced Genetics.
653-2 Advanced Genetics Laboratory.
660-3 Population Genetics.
672-5 The Invertebrates
673-1 Marine Field Trip.
674-5 Ecological Physiology of Aquatic Animals.
678-4 Animal Behavior
683-3 Comparative Vertebrate Physiology
684-2 Laboratory for Comparative Vertebrate Physiology.
699-1 Special Problems in Biology
701-1 to 5 Selected Topics in Biology.
723-3 Enzymes.
724-3 Cell Physiology.
728-3 Photobiology.
732-3 Microbial Physiology.
733-2 Laboratory for Microbial Physiology.
734-3 Molecular Genetics.
736-3 Phytohormones.
743-4 Radioisotope Principles.
745-4 Microinstrumentation.
747-4 Biochemical Instrumentation.
780-3 Protein and Vitamin Nutrition.
781-3 General Endocrinology.
782-1 General Endocrinology Laboratory.
785-5 Invertebrate Development.
786-3 Experimental Morphology.
787-2 Experimental Morphology Laboratory.
788-3 Tissue Regression in Development.
800-1 Graduate Seminar.
825-3 Metabolic Control Processes.

845-3 Biochemistry of Natural Products.

899-2 to 18 Graduate Research.

900-1 Graduate Seminar.

Business (BUS)

101-3, 102-3 Business and Society. An introduction to American business and its environment. Must be taken in sequence.

103-3 Introduction to Data Processing and COBOL. This course acquaints the inexperienced with the data-processing fundamentals and terminology pertinent to programming business systems and requires the student to write and test COBOL programs. Prerequisite: BUS 101, 102.

301-3 Introduction to Statistical Analysis. Statistical methods used in the analysis of business problems. The theory and application of frequency distributions; measures of location; variation and further descriptions. An introduction to probability; expectations, games, and decisions; theoretical probability distributions; sampling and sampling distribution. A systematic presentation of price and quantity indexes; seasonal trend and cycle analysis. Prerequisite: MTH 128, 129, 130.

302-3 Introduction to Statistical Inference. Emphasis is placed on the setting of standards as aids in decision making. Techniques specifically covered are inferences concerning means; standard deviations; proportions; analysis of variance; non-parametric tests; linear regression, and correlation. Prerequisite: BUS 301.

303-3 Introduction to Operations Research Techniques. Study of those modern mathematical and analytical techniques useful in solving business problems. Examples of techniques examined are mathematical programming, queuing theory, search theory, game theory. Prerequisite: MTH 128, BUS 301, 302.

311-3 Introduction to Electronic Data Processing. Development of electronic data processing. An analysis of programming as applied in accounting, production, financial, marketing, and other business systems. Laboratory exercises in programming with the use of electronic processing equipment. Not for students who have taken CS 210. Prerequisite: ACC 201, BUS 301, BUS 103 or equivalent.

312-3 Electronic Data Processing Methods. Its significance for management. Stored program concept techniques of systems design, and management problems concerned with the mechanization of data processing. Prerequisite: BUS 303, 311 or permission of instructor.

350-3 Business Law I. Nature of law and legal systems. Torts, liability, contracts: essential elements. Prerequisite: junior standing.

351-3 Business Law II. Law of agency, partnerships, corporations, credit, and bankruptcy. Prerequisite: BUS 350. May be taken after BUS 352.

352-3 Business Law III. Law of property, sales, and commercial paper, including discussion of the Uniform Commercial Code. Prerequisite: BUS 350. May be taken before BUS 351.

411-3 Quantitative Methods for Business Decisions. Uses of formal models, models of the decision problem, rational choice under uncertainty, sequential descriptive models, multistage control. Prerequisite: BUS 302 and an introductory course in calculus.

412-3 Applications of Operations Research Techniques. Stochastic decision models, non-linear programming, dynamic programming, Markov decision processes. Prerequisite: BUS 303.

477-1 to 4 Special Studies in Business. Registration only with consent of instructor.

481-3 Business Policy and Administration. An integrative course designed to bring all the functional areas of business to bear on the analysis and solution of business problems. Should be taken at the final stage of the undergraduate program in the senior year.

482-3 Government and Business. Relations of business and government. Prerequisite: senior standing.

483-3 Business Enterprise and Public Policy. Analysis of selected areas involving public policy and business. Prerequisite: senior standing or permission of instructor.

491-3 Senior Seminar in Quantitative Business Analysis. A seminar for seniors in the field of quantitative business analysis designed to acquaint the student with current and future trends in automation and research techniques. Prerequisite: open only to seniors in quantitative business analysis or by permission of the instructor.

Graduate Courses

611-3 Graduate Survey of Law and the Legal Environment.

621-3 Graduate Survey in Statistics.

695-3 Ethics of an Industrial Society.

711-3 Behavioral Theory of Organization.

722-3 Mathematics for Business Research.

723-3 Quantitative Methods for Business Decisions I.

724-3 Quantitative Methods for Business Decisions II.

725-3 Business and Social Science Research Methods II.

731-3 Administrative Policy and Decisions.

770-4 Law, Ethics, and Social Environment.

771-4, 772-4 Quantitative Business Analysis I and II.

779-4 Policy Formulation and Administration.

781-1 to 4 Special Studies in Business.

Chemistry (CHM)

101-4 Introduction to Chemistry. An historical approach to the fundamentals of chemistry: the composition and structure, properties and transformations of matter. For students with no previous chemistry. May be followed by CHM 111, 121, or 131.

111-4 Macroscopic Chemistry. A study of the physical and chemical behavior of large collections of atoms and molecules. Prerequisite: high school chemistry or CHM 101.

121-4 Submicroscopic Chemistry. A study of the structure and properties of atoms and molecules and the macroscopic consequences thereof. Prerequisite: high school chemistry or CHM 101.

131-4 Men and Molecules — The Chemical Enterprise. A topical study of the ways in which chemical principles are applied in the modern world; the impact of chemistry on society. Prerequisite: CHM 101 or 111 or 121.

141-4 Quantitative Chemistry. A study of the quantitative aspects of chemistry emphasizing the computational and experimental estimation of the composition of chemical systems. Prerequisite: CHM 111 or 121 and MTH 102.

211-5, 212-5, 213-5 Organic Chemistry. A course in the principles, theories, and applications of the chemistry of the compounds of carbon with laboratory illustrations of the lecture material and the techniques of preparative organic chemistry. Prerequisite: CHM 111 or 121. 2 lect., 2 lab. Must be taken in sequence.

301-3 Philosophy of Chemistry. An upper level course for non-science majors who wish to learn about chemistry from a philosophical and humanist viewpoint. Prerequisite: Junior or Senior standing and consent of instructor.

311-6 (see also 511-6) Analytical Chemistry I. A course in the systematic classification and identification of organic compounds by chemical and instrumental methods. Prerequisite: CHM 213. 2 lect., 3 lab.

312-6 (see also 512-6) Analytical Chemistry II. An introductory course in gravimetric, volumetric, colorimetric, and electrochemical analysis, including calculations and interpretation of chemical data. Prerequisite: CHM 141. 2 lect., 3 lab.

313-6 (see also 513-6) Analytical Chemistry III. Introduction to the theory and practice of modern chemical instrumentation. Topics include elementary electronics, spectrophotometry, polarography, radioactivity and chromatography. Prerequisite 452 and 312. 2 lect., 3 lab.

319-1 Chemical Literature. Introduction to chemical literature in journals, handbooks, abstracts, monographs, and patents. Literature searches will be required in a variety of chemical areas. Prerequisite: CHM 212 and 451. 1 lect.

420-3, 421-3 (see also 520-3, 521-3) Inorganic Chemistry. The principles and concepts of inorganic chemistry, including the periodic table, atomic structure, bonding coordination compounds, and an introduction to group theory. Prerequisite: CHM 453 or consent of instructor. 2 lect. Must be taken in sequence.

425-2 (see also 625-2) Inorganic Preparations. Preparation of representative inorganic compounds. Prerequisite: CHM 421. 2 lab.

451-3, 452-3, 453-3 (see also 551-3, 552-3, 553-3) Physical Chemistry. A course in the theoretical aspects of chemistry including thermodynamics, chemical kinetics, molecular structure and spectra, and the structure of solids and liquids. Prerequisite: CHM 113 or 109, MTH 231, PHY 242 or consent of instructor. 2 lect. Must be taken in sequence.

455-2 (see also 555-2) Physical Chemistry Laboratory. A course in the experimental methods of physical chemistry. Prerequisite: CHM 452. 2 lab.

465-4, 466-4 (see also 665-4, 666-4) Introduction to Polymer Science. An introductory course in the principles and applications of the science of high polymers, with laboratory illustrations of the lecture material and the techniques of polymer science. Prerequisite: senior standing, Division of Science and Engineering or consent of the department and one year of college chemistry; 465 prerequisite to 466. 2 lect., 4 lab.

488-1 to 3 (see also 588-1 to 3) Independent Reading. Prerequisite: consent of department.

499-1 to 4 (see also 599-1 to 4) Special Problems in Chemistry. Prerequisite: senior standing and consent of department.

Graduate Courses

511-6 Analytical Chemistry I.

512-6 Analytical Chemistry II.

513-6 Analytical Chemistry III.

520-3, 521-3 Inorganic Chemistry.

551-3, 552-3, 553-3 Physical Chemistry.

555-2 Physical Chemistry Laboratory.

588-1 to 3 Independent Reading.

599-1 to 4 Special Problems in Chemistry.

velopment of popular philosophy. Prerequisite: Greek 203 or equivalent.

453-3 Readings in Greek History. Courses offered under this number are based on the works of the Greek historians Herodotus, Thucydides, Xenophon, and Polybius and of the biographer Plutarch. Topics for investigation include methods of composition, influences on historiography from the sophists and philosophers, the development of Greek historical writing, and supplemental evidence from inscriptions and nonliterary sources. Prerequisite: Greek 203 or equivalent.

455-3 Readings in Greek Politics and Political Theory. Courses offered under this number are based on the orations of Lysias, Demosthenes, and Isocrates and on the political treatises of the Old Oligarch, Plato, Xenophon, and Aristotle. Topics for investigation include the development of political ideas and vocabulary, nonliterary sources for our knowledge of Greek civil life, and influences on Roman theories and practices. Prerequisite: Greek 203 or equivalent.

481-3, 482-3, 483-3 Independent Reading.

Latin Language and Literature

101-4, 102-4, 103-4 Beginner's Course. Rapid survey of essentials of the Latin language. Must be taken in sequence.

201-3, 202-3, 203-3 Intermediate Latin. Review of essentials and reading for comprehension in selected authors. Must be taken in sequence. Prerequisite: Latin 103 or equivalent.

351-3 Readings in Roman Drama. Courses offered under this number are based on the works of Plautus, Terence, and Seneca. Each course involves the reading of at least one complete play in Latin. Topics for investigation include the importance of Plautus and Terence for the reconstruction of Greek New Comedy, the architecture of the Roman theater, the history of Roman tragedy, the relationship of Seneca's tragedies to his Stoic philosophy. Prerequisite: Latin 203 or equivalent.

353-3 Readings in Roman Epic. Courses offered under this number are concerned with Virgil's *Aeneid,* Ovid's *Metamorphoses,* and with the works of Lucan, Statius, Valerius Flaccus, and Silius. Topics for investigation include the intent and structure of the *Aeneid,* the history and development of Roman epic, structure and transitional devices in the *Metamorphoses,* the nature of rhetorical epic. Prerequisite: Latin 203 or equivalent.

355-3 Readings in Roman Poetry. Courses offered under this number are concerned with the study of Roman lyric and elegiac poetry. Typical readings include the *Eclogues* of Virgil and the poems of Catullus, Horace, Propertius, Tibullus, and Ovid. Topics for investigation include meters and style of Latin lyric, the amatory tradition, the influence of Hellenistic poetry. Prerequisite: Latin 203 or equivalent.

357-3 Readings in Roman Satire. Courses offered under this number are based on the satiric works of Horace, Juvenal, Persius, Petronius, and Martial. Topics for investigation include the development of this peculiar Roman genre, the fragments of Lucilius, satirical methods and techniques, the satiric epigram, and satire as a source of information about Roman private life. Prerequisite: Latin 203 or equivalent.

451-3 Readings in Roman Didactic Literature. Courses offered under this number are concerned with the study of Roman philosophical and didactic literature. Typical readings include selections from Lucretius, Virgil's *Georgics,* Cicero's philosophical essays, or Quintilian. Topics for investigation include Roman attitudes toward Epi-

cureanism, farming as a symbol of contemporary Roman politics, Cicero's synthesis of Greek philosophy, Quintilian and a gentleman's education. Prerequisite: Latin 203 or equivalent.

453-3 Readings in Roman History. Courses offered under this number are based on the works of the Roman historians Sallust, Livy, and Tacitus and of the biographer Suetonius. Topics for investigation include the Roman historiographical tradition, family and political influences, evidence from nonliterary sources, influence from Greek historiography. Prerequisite: Latin 203 or equivalent.

455-3 Readings on Roman Politics and Government. Courses offered under this number are based on the political essays and speeches of Cicero and on the letters of Cicero and Pliny. Topics for investigation include the nature of Roman political campaigns, selections from Roman constitutional law, information from inscriptions, and Augustus' *Res Gestae*. Prerequisite: Latin 203 or equivalent.

481-3, 482-3, 483-3 Independent Reading.

Computer Science (CS)

151-3 Introduction to Computing I. Introduction to computers, programming, and algorithms. Basic programming. Programming and computing systems. 2 hrs. lect., 2 hrs. lab. Prerequisite: MTH 127 or equivalent.

152-3 Introduction to Computing II. Program structure. Analysis of numerical and nonnumerical problems. Introduction to machine and assembly language programming. Prerequisite: CS 151. 2 hrs. lect., 2 hrs. lab.

153-3 Introduction to Digital Computers. Computer structure and machine language. Addressing techniques. Digital representation of data. Symbolic coding and assembly systems. Selected programming techniques. Logic design, micro-programming, and interpreters. Prerequisite: CS 152. 2 hrs. lect., 2 hrs. lab.

210-3 Introduction to FORTRAN IV Programming I. Introduction to digital computers and programming, flow charts, programming of digital computers using FORTRAN IV. Prerequisite: MTH 132.

211-3 Introduction to FORTRAN IV Programming II. FORTRAN IV programming continued; use of mass storage; subroutine library, in particular the scientific subroutine package; plotting techniques; special debugging techniques. Prerequisite: CS 210.

221-3 COBOL Programming. Elements of the COBOL language, study and use of various types of file structures illustrated by student programs using a variety of applications. Prerequisite: BUS 103 or CS 210 or CS 151.

252-3 Introduction to Logic and Finite Set Theory. Basic set algebra. Boolean algebra and propositional logic. Applications to computer science. Prerequisite: CS 151 or CS 210.

253-3 Introduction to Networks and Graphs. Transport networks. Applications to computer science. Prerequisite: CS 252.

316-3, 317-3 Numerical Methods for Digital Computers. An introduction to numerical methods used in the sciences. Included will be methods of interpolation, data smoothing, functional approximation, integration, solutions of systems of equations, and solutions of ordinary differential equations. Prerequisites: MTH 233 and CS 210 or 211.

351-4, 352-4, 353-4 Advanced Computer Programming. A review of assembly language programming and several important programming techniques. Detailed study of data structures. A discussion of input/output, interrupts, timing problems, and other problems re-

lated to the operating system. Prerequisites: CS 153 and 253 or permission of instructor. 3 hrs. lect., 2 hrs. lab.

451-4, 452-4 Compiler Design and Construction. An applied course in which a compiler is written. Scanning, parsing techniques, code generation, language design. 3 hrs. lect., 2 hrs. lab. Prerequisite: CS 353.

453-4 Design of Small Computing Systems. Perform projects in the laboratory which combine engineering hardware and computer science software concepts in the design and implementation of small special purpose computer systems. 2 lect., 4 hrs. lab. Prerequisite: CS 452, EGR 442.

499-1 to 5 Selected Topics. A study of selected topics in computer science. Prerequisites: CS 353 and permission of instructor. Repeatable.

Graduate Courses

516-3, 517-3 Numerical Methods for Digital Computers.

551-4, 552-4, 553-4 Advanced Computer Programming.

651-4, 652-4, 653-4 Compiler Design and Construction.

699-1 to 5 Selected Topics.

Economics (EC)

103-3 Evolution of American Industrial Society. Survey of the forces influencing the early economic development of America. Development of economic institutions in the United States.

201-3, 202-3, 203-3 Principles of Economics. Fundamental economic principles as an aid in understanding modern society. **201:** Institutional economics; **202:** Microeconomics; **203:** Macroeconomics. Prerequisite: sophomore standing or consent of instructor. Should be taken in sequence.

Advanced Courses

Prerequisite for advanced courses: EC 201, 202, 203.

301-3 Money and Banking. Analysis of the behavior and significance of money, credit, debt, and the banking system.

315-4 Intermediate Price Theory. Examination of the general principles and analytical tools of microeconomic analysis.

316-4 Institutional Economics. Economics of the American economy in its institutional forms and economic theory analyzed to comprehend the nature and problems of economic life and thought today.

317-4 Intermediate National Income Analysis. An examination of the macroeconomic variables in determining the national income, employment, and the price level.

321-3 European Economic History. A survey of European economic history from ancient to modern times. Evolution of capitalism. Interrelationships between economic, political and social institutions.

340-4 Comparative Economic Systems. Chief characteristics of capitalism, communism, socialism, and fascism. By comparison, to clarify the economic process in a free-enterprise society.

351-4 Labor Economics. Labor history, theory, and management philosophy: structure of collective bargaining, and labor market analysis.

352-4 Labor Legislation. Public policy with respect to protective and labor management legislation. Prerequisite: EC 351 or consent of instructor.

353-4 **History of the American Labor Movement.** A history of the development of trade unionism in the United States. Prerequisite: EC 351 or consent of instructor.

360-3 **Current Economic Problems.** Examination of selected economic problems of the present time. For non-majors only.

401-3 **Intermediate Managerial Economics.** Role of economic analysis in management decision making.

402-3 **Monetary Theory.** The development of the theories of money, role of interest and monetary policy, and their relationship to national income, output, prices, and balance of payments.

409-3 **Introduction to Econometrics.** An application of statistics to the testing of economic theory. Prerequisite: EC 315, 317, BUS 301, 302, 303.

410-3 **Mathematical Economics.** An application of mathematical tools in the formulation of economic theory. Prerequisite: EC 409.

412-3 **Economic Analysis and Forecasting of Business Cycles.** Techniques and theories used in forecasting the business cycle. Prerequisite: EC 317 or consent of instructor.

425-4 (see also 625-3) **History of Economic Thought I.** Writers from Adam Smith to Alfred Marshall.

426-4 (see also 626-3) **History of Economic Thought II.** Twentieth-century writers.

431-4 (see also 631-3) **Federal Public Finance and Taxation.** Problems and principles of federal public finance and taxation.

432-4 (see also 632-3) **State and Local Public Finance and Taxation.** Problems and principles of state and local public finance and taxation. Prerequisite: EC 431 or consent of instructor.

441-4 (see also 641-3) **International Economics I.** The economic basis of international trade; the nature and mechanism of international payments.

442-4 (see also 642-3) **International Economics II.** International economic policies and problems. Prerequisite: EC 441 or consent of instructor.

444-4 (see also 644-3) **Economics of Development.** Theoretical and empirical analysis of cultural change and industrial development; emphasis on emerging economies.

447-3 **Economic Development: China.** An analysis of current economic development of China and its repercussion in international economic activities. Prerequisite: EC 444 or consent of instructor.

448-3 **Economic Development: Tropical Africa.** Cultural, economic, and social changes in the emergent countries of tropical Africa. Prerequisite: EC 444 or consent of instructor.

454-4 (see also 654-3) **Economics of Collective Bargaining.** Development of collective bargaining in the United States; economic cost of labor-management relations. Prerequisite: EC 351 or approval of instructor.

477-3 **Economic Studies.** An examination of special economic issues. Prerequisite: consent of instructor.

481-1 to 4, 482-1 to 4, 483-1 to 4 **Independent Reading.** Prerequisite: consent of instructor.

491-3 **Seminar in Monetary Theory.** An analysis of current developments in monetary theory. Prerequisite: EC 301, 402, or consent of instructor.

492-3 **Seminar in Econometrics.** Examination of current developments in econometrics. Prerequisite: EC 409, 410, or consent of instructor.

493-3 **Seminar in Economic History.** Selected topics in economic history. Prerequisite: EC 321 or consent of instructor.

494-3 Seminar in Public Finance. Selected topics in public finance. Prerequisite: EC 431, 432 or consent of instructor.

495-3 Seminar in International Economics. Selected topics in international economics. Prerequisite: EC 441, 442 or consent of instructor.

496-3 Seminar in Labor Economics. Manpower economics and other selected topics. Prerequisite: EC 351, 454, or consent of instructor.

Graduate Courses

511-3, 512-3, 513-3 Graduate Survey, Principles of Economics for Teachers.

514-3, 515-3, 516-3 Economic Studies for Teachers.

601-3 Managerial Economics.

602-3 Monetary Theory.

609-3 Introduction to Econometrics.

610-3 Introduction of Mathematical Economics.

612-3 Economic Analysis and Forecasting of Business Cycles.

621-3, 622-3 Graduate Survey in Principles of Economics.

625-3 History of Economic Thought I.

626-3 History of Economic Thought II.

631-3 Federal Public Finance and Taxation.

632-3 State and Local Public Finance and Taxation.

641-3 International Economics I.

642-3 International Economics II.

644-3 Economics of Development.

651-3 Labor Economics.

654-3 Economics of Collective Bargaining.

677-3 Economic Studies.

715-3 Advanced Price Theory.

717-3 Advanced National Income Analysis.

719-3 Economic Theory III.

721-3 Contemporary Political Economy I.

722-3 Contemporary Political Economy II.

725-3 Economic and Social Systems I.

726-3 Economic and Social Systems II.

760-12 Internship.

765-3 Internship Seminar I.

766-3 Internship Seminar II.

771-4 Aggregate Economic Analysis and National Policy.

777-3 Economic Studies.

780-3 Economic Problems Seminars

781-1 to 3, 782-1 to 3, 783-1 to 3 Research in Economics.

Education (ED)

119-1 to 5 Externship in the Public Schools. A supervised field experience. Activities may include tutoring, working with small groups of children, supervising classrooms and recreational activities and planned observations. Prerequisite: approval of the College of Education.

201-3, 202-3, 203-3 Educational Psychology. Psychological principles with emphasis on their application to teaching. ED 201 is not open to students who have had PSY 111, 112. Prerequisite for 202: 201 or

PSY 111, 112 or equivalent. Prerequisite for 203: ED 202 or consent of instructor.

219-1 to 8 Assistant Teacher in the Public Schools. A supervised experience in which the student assumes a position as a member of an instructional team to perform such functions as preparing instructional materials, routine managerial tasks, supervising playground, lunch room, bus activities, and working with small groups of pupils. Prerequisite: approval of the College of Education.

241-4, 242-4, 243-4 Physical Science. Content of the physical sciences integrated to promote understanding of and intelligent interaction with physical aspects of environment. Lect. and lab. must be taken concurrently. Prerequisite for 242: 241 or consent of instructor. Prerequisite for 243: 242 or consent of instructor.

270-3 Introduction to Rehabilitation. A survey course which will introduce the student to the philosophy of rehabilitation. The history and development of rehabilitation and related professions will be studied in depth. This course will require two hours per week of field studies.

311-3 Elementary School Science: Curriculum and Materials. A study of basic principles, methods, curriculum trends, and material; individual laboratory work. Prerequisite: ED 203 or equivalent and at least nine credit hours in science or consent of instructor.

315-3, 316-3, 317-3 Elementary School Language Arts: Curriculum and Materials. Language and communication in the elementary school, including practices and materials used in guiding the listening, speaking, reading, writing, and related skill experiences of children. Recommended that these be taken in sequence. If ncessary, 315 emphasizing listening and speaking and 316 emphasizing written communication may be taken concurrently. 315 and 316 are prerequisite for 317 which emphasizes reading. Prerequisite: ED 203 or equivalent. (Participation experiences required during enrollment in these courses.)

318-3 Elementary School Mathematics: Curriculum and Materials. Instructional materials and methods of meaningul explanations of mathematics in the elementary school based upon structural properties of number and numeration system studies at this level. This course is required of all students preparing to teach in the elementary school. Prerequisite: ED 203, or equivalent and MTH 142. (Participation experiences required during enrollment in course.)

327-4 Speech and Hearing Therapy in the Public Schools. Therapeutic principles and procedures; problems in organization for public school speech and hearing therapy. Prerequisite: ED 203 or equivalent.

332-3 Secondary School English: Curriculum and Materials. Curriculum, methods, and materials for the language arts in the secondary school; current trends in the teaching of English. Prerequisite: ED 203 or equivalent, junior standing, and 22 hours in the teaching field including ENG 341. (Participation experiences required during enrollment in course.)

333-3 Secondary Speech and Drama: Curriculum and Materials. A curriculum and materials course for those preparing to teach speech and drama in secondary schools: curriculum, teaching methods, class organization, producing plays, and co-curricular activities. Prerequisite: ED 203 or equivalent, junior standing, and 24 credit hours in the teaching field with at least 9 hours at the 300 level or above. (Participation experience required during enrollment in course.)

334-3 Modern Foreign Languages: Curriculum and Materials. The modern language curriculum in the public schools; purposes; methods; materials. Prerequisite: ED 203 or equivalent; the 203 course in the language field; and junior standing, or consent of instructor. (Participation experiences required during enrollment in course.)

338-3 **Secondary School Mathematics: Curriculum and Materials.** Curriculum, methods, and materials in the mathematics of grades 7-12. Prerequisite: ED 203 or equivalent and at least a minor in mathematics. (Participation experiences required during enrollment in this course.)

372-3 **The Rehabilitation Worker.** This course examines the individual needs of the disabled and disadvantaged as they relate to the responsibility of society and the community. Prerequisites: ED 270 or permission of instructor.

373-3 **Medical Aspects of Rehabilitation I.** Introduction to medical terminology and system disorders which usually have continued and long-standing residual effects and commonly require rehabilitation intervention. Prerequisite: ED 270.

374-3 **Medical Aspects of Rehabilitation II.** This course provides for the examination of the treatment and rehabilitation of those physical disabilities which impose chronic limitations on activity. Will include a consideration of the social and vocational adjustments which must be made by the individual. Prerequisite: ED 373.

375-3 **Rehabilitation of the Deaf I.** Introduction to social, vocational, and adjustment problems of the deaf. Manual communication technique for professionals preparing to work in rehabilitation or other programs for the deaf will be an integral part of the course. Off-campus field experiences will be required.

376-3 **Rehabilitation of the Deaf II.** Introduction to social, vocational, and adjustment problems of the deaf. Manual communication technique for professionals preparing to work in rehabilitation or other programs for the deaf will be an integral part of the course. Off-campus field experiences will be required. Prerequisite: ED 375.

Advanced Courses

Courses having numbers of 400 or above require junior or senior standing in education. Certain courses have additional prerequisites.

402-4 **History of Education.** Origin and development of education thought and institution in western civilization.

403-4 **Child Development.** Factors which influence growth and development. Prerequisite: ED 203 or equivalent.

404-3 **Adolescent Development.** An examination of the period in the sequence of development known as adolescence; with particular attention given to physical development and its psychological and social concomitants and to the effect upon the adolescent of social forces, especially schools. Prerequisite: ED 203 or equivalent.

405-3 **Current Tendencies in Education.** (May be repeated maximum of 12 hrs.) A consideration of current trends and theories in education, and the development of criteria and procedures for their evaluation and implementation.

411-4 **Early Childhood Education.** Nursery, kindergarten, and primary schools in relation to contemporary life to develop appreciation of present-day procedure. Prerequisite: ED 203 or equivalent. (Participation experiences required during enrollment in this course.)

412-4 **Kindergarten: Curriculum and Materials.** Materials and methods. Prerequisite: ED 203 or equivalent. (Participation experiences required during enrollment in this course.)

415-3 to 4 **Advanced Reading Instruction.** Intensive study of selected problems in the improvement of reading. For teachers, administrators, and supervisors. Prerequisite: ED 317 or equivalent or consent of instructor.

416-4 **Advanced Science for the Elementary Teacher.** Consideration of selected scientific principles which have particular application in the elementary school. Inquiry through a laboratory approach is

emphasized. Prerequisite: BIO 111, 112, 113; ED 241, 242, 243 or equivalent; or consent of instructor.

417-3 to 4 Elementary School Social Studies: Curriculum and Materials. Objectives, principles, and trends in elementary social studies education. Prerequisite: ED 203 or equivalent.

418-4 Advanced Mathematics Instruction in the Elementary School. For teachers or supervisors who desire study in improvement of instruction. Prerequisite: ED 203 or equivalent.

419-4 to 15 Supervised Teaching, Elementary. Student teachers are assigned to a public school full time. They work under the direct supervision of an experienced classroom teacher. In the fall, student teaching begins in September with the opening of the public schools and continues for approximately 15 weeks to the end of the fall quarter. During the winter and spring quarters, the period of student teaching corresponds with the respective academic quarter. A student may receive 15 credit hours for student teaching in the fall and 12 credit hours for winter and spring quarters. There is no student teaching during the summer. Formal application must be made through the office of the Director of Laboratory Experiences during the first two weeks of the quarter prior to student teaching. Concurrent enrollment in ED 422 or consent of the Director of Laboratory Experiences is required and constitues a full load for the quarter. Prerequisite: 315, 316, 317, 318 or equivalent; 112 credit hours (at least 12 of which must have been taken at Wright State), participation experiences, and a 2.0 cumulative grade point average.

420-3, 421-3 Books and the Educational Program. The selection and use of literary and informational books (trade, not text) in the educational program. ED 420 emphasizes books for the late primary, middle grades, and young adults. ED 421 emphasizes beginning books, the art of children's books, wide use of picture story books, the place of books of poetry, music, art.

422-3 Educational Organizational. Local, state, and national school organization; legal provisions concerning teachers; professional associations. To be taken concurrently with ED 419 or 429; or consent of instructor.

423-3 Black Urban Culture. To familiarize inner-city educators, students preparing for urban teaching, and departmental majors with the cultural uniqueness of the Black American living in urban centers.

426-3 Outdoor Education. A course designed to provide teachers and leaders seeking skills in the use of the out-of-doors as a resource for program or curriculum enrichment, with laboratory experiences and field work in a variety of biotic communities emphasizing the ecological relationships.

427-3 Driver and Traffic Safety Education: Curriculum and Materials. An analysis of the driving tasks. Selection of curriculum materials and evaluation techniques to be used in teaching the various factors affecting driver and traffic safety. Prerequisite: ED 203 and senior standing in Education or permission of instructor.

428-3 Organization of Driver and Traffic Safety Education Programs. Organizational aspects of driver and traffic safety education as they relate to the total school program. The historical and philosophical aspects, related professional organizations, and occupational opportunities will be considered. The objectives, role, and organization of driver education laboratories will be examined. Laboratory experiences will be provided. Prerequisites: ED 203 and 427 (may be taken concurrently).

429-4 to 15 Supervised Teaching, Secondary. Same as ED 419 except applied to secondary level and to practical arts. Prerequisite: appropriate curriculum and materials course; 112 credit hours (at least 12 of which must have been taken at Wright State, normally including

work in both an academic major and in professional education); participation experiences; a 2.0 cumulative grade point average; and a 2.25 cumulative average in the teaching field.

430-3 **Teaching About Religion in the Public Schools.** (Taught jointly with the College of Liberal Arts; see REL 430.) An introduction to the historical background and court decisions pertaining to teaching about religion in the public schools; current ways in which religion is taught in the public school; and new experimental approaches to teaching about religion.

431-3 **Secondary School Science: Curriculum and Materials.** Curriculum and materials for teaching science with special emphasis on objectives, evaluation, planning, resources and facilities, and curricular trends in science education. Prerequisite: at least a minor in science teaching field and ED 203 or equivalent. (Participation experience required during enrollment in course.)

432-3 to 4 (formerly 736-3 to 4) **Improving Reading in the Secondary School.** Materials and purposes that aid in developing reading skills in both English and content area. Prerequisite: ED 332 or teaching experience.

433-2 **Introduction to Business and Distributive Education.** A survey course designed to acquaint the student with business and distributive education philosophy, objectives, and curricula on the secondary and post-secondary levels of instruction. Prerequisite: ED 203 or equivalent; at least a minor in business or distributive education; and junior or senior standing.

434-1, 435-1, 436-1, 437-1, 438-1 **Business Education: Curriculum and Materials.** 434: Typing 435: Shorthand; 436: Social Business; 437: Accountancy; 438: Marketing. Prerequisite: at least a minor in the field; ED 433 or concurrent registration; and ED 203 or equivalent.

439-3 to 4 **Secondary School Social Studies: Curriculum and Materials.** Objectives, principles, and trends in secondary social studies education. Prerequisite: at least a minor in the field and ED 203 or equivalent. (Participation experience required during enrollment in course.)

440-1 to 4 **Senior Seminar in Education.** Curriculum trends in the modern schools, developing a philosophy of education. Prerequisite: ED 419 or 429.

441-3 **Education of the Mentally Retarded.** Psychology of mentally retarded children: causes and relationship to family and community education. Prerequisite: ED 203 or equivalent.

442-3 **Curriculum Development for the Mentally Retarded.** Practices and procedures used in developing school programs; techniques and methods used in the development of modern life-problem centered curricula, utilizing social studies and science in the implementation of the curriculum. Prerequisite: ED 441. (Participation experience required during enrollment in course.)

443-3 **Skill Subjects for the Mentally Retarded.** Place of language arts and arithmetic in the curriculum; teaching problems, processes, methods, and techniques used to teach skill subjects at various levels of the special class program. Prerequisite: ED 441. (Participation experience required during enrollment in course.)

444-3 **Materials for the Mentally Retarded.** Techniques in the preparation, selection, and adaptation of instructional materials for the mentally retarded; sources of materials, application, and demonstration at various levels of the special class program. Students having or desiring certification in EMR only should take this course concurrently with ED 442.

445-3 **Occupational Training for the Mentally Retarded.** Role of occupational training in the curriculum; relationships with the world of work; problems of organizing and administering; methods and

techniques used in developing occupational interests and abilities at various levels. Prerequisite: ED 441.

446-4 Principles of Teaching the Basic Skills. Findings of modern research that bear on learning and teaching basic skills. Prerequisite: 18 credit hours in education.

447-4 Teaching in the Public School. Study, observation, and evaluation of practices. Offered only to students who have completed the pertinent curriculum and materials course and are seeking a waiver of all or part of student teaching on the basis of full-time teaching experience.

449-3 to 4 Audio-Visual Materials and Methods. Role of visual and auditory instruction; the psychology of and educational principles pertinent to such instruction. Prerequisite: curriculum and materials course or courses.

450-1 to 9; max. 3 in any one term Minor Problems. Conference course. Prerequisites: senior or graduate standing in education and written consent of Dean of Education prior to registration.

455-3 Education of Children with Learning and Behavior Disorders. An introduction to the learning and behavior problems of exceptional children. An overview of the major remedial approaches in the literature.

456-3 Clinical Practice in Learning Disability I. An overview of the theoretical bases of diagnostic teaching. A supervised clinical course in the diagnostic teaching of children with academic deficiencies.

457-3 Clinical Practice in Learning Disability II. An overview of the theoretical bases of behavioral management. Supervised clinical practice in the observation of children with behavioral disorders in group and individual situations.

458-4 to 9 Practicum in Special Education. On-the-job supervision of teachers of special education (exceptional children) who have completed a student teaching experience (or its equivalent) in another field. Prerequisite: permission of instructor.

461-3 Principles of Guidance. Emphasizes the student's understanding of his personal frame of reference with respect to guidance and counseling principles and services. Social, psychological, and philosophical influences are considered. Prerequisite: senior or graduate status in education.

462-3 Pupil's Personality Problems. Applies personality and developmental theories, perspectives in mental health, and family and school environmental influences toward the recognition and resolution of the problems of pupils. Prerequisite: senior or graduate standing in education or consent of the instructor.

463-3 Mental Health. Factors influencing the behavior of children and youth; methods which teachers may use in observing, analyzing, and improving pupil attitudes and behavior. Prerequisite: senior or graduate standing in education or consent of instructor.

464-3 to 4 Evaluation. Evaluation of learning, including selected forms of measurement and interpretation of data: sociometric techniques, anecdotal records, and testing. Prerequisite: curriculum and materials course or permission of instructor.

470-1 to 6 Curriculum and Instruction Workshop. (Specific subtitles to be added with individual workshops.) An intensive study of a selected area of the school curriculum designed to meet the particular needs of the participating preservice and inservice teachers, administrators, and curriculum supervisors. Prerequisite: senior or graduate standing in education or consent of instructor. May be repeated for a maximum of 9 hrs.

472-4 Rehabilitation Seminar. Seminar for advanced rehabilitation education majors. Students will examine problems and programs of special interest in rehabilitation.

473-12 (4 hrs. per quarter) **Rehabilitation Practicum.** An integrative experience for the rehabilitation education student. Field work of 8 clock hours per week in a rehabilitation agency over three consecutive quarters. May be completed in one-quarter block with special permission. This course will be graded on a pass-unsatisfactory basis.

474-3 **Rehabilitation of the Emotionally Disturbed.** The utilization of techniques of rehabilitation in the restoration of the emotionally disturbed, the mentally retarded, and those with character disorders evidenced by drug abuse, alcoholism, or a history of social deviance. Prerequisite: ED 374.

475-3 **Rehabilitation of the Disadvantaged.** Utilization of rehabilitation knowledge in the effective solution to the individual problems of those who are characterized as chronic welfare recipients or hard-core unemployed. Prerequisite: ED 474.

476-1 to 2; max. of 5 **Current Issues in Reading Instruction.** Conference course on emerging issues. Prerequisite: education psychology and ED 317 or equivalent.

478-9 **Workshop in Community Resources.** Techniques for survey of community resources; ways and means of utilizing these resources in class instruction. Prerequisite: a teaching certificate.

Graduate Courses

602-4 **History of Education.**

603-4 **Child Development.**

604-3 **Adolescent Development.**

605-3 **Current Tendencies in Education.**

611-4 **Early Childhood Education.**

612-4 **Kindergarten: Curriculum and Materials.**

615-3 to 4 **Advanced Reading Instruction.**

616-4 **Advanced Science for the Elementary Teacher.**

617-4 **Elementary School Social Studies: Curriculum and Materials.**

618-4 **Advanced Mathematics Instruction in the Elementary School.**

620-3, 621-3 **Books and the Educational Program.**

621-3 **Books and the Educational Program.**

623-3 **Black Urban Culture.**

626-3 **Outdoor Education.**

627-3 **Driver and Traffic Safety Education: Curriculum and Materials.**

628-3 **Organization of Driver and Traffic Safety Education Programs.**

630-3 **Teaching About Religion in the Public Schools.**

631-3 **Secondary School Science: Curriculum and Materials.**

632-3 to 4 **Improving Reading in the Secondary School.**

633-2 **Introduction to Business and Distributive Education.**

634-1, 635-1, 636-1, 637-1, 638-1 **Business Education: Curriculum and Materials.**

639-3 to 4 **Secondary School Social Studies: Curriculum and Materials.**

641-3 **Education of the Mentally Retarded.**

642-3 **Curriculum Development for the Mentally Retarded.**

643-3 **Skill Subjects for the Mentally Retarded.**

644-3 **Materials for the Mentally Retarded.**

645-3 **Occupational Training for the Mentally Retarded.**

646-4 **Principles of Teaching the Basic Skills.**

647-4 **Teaching in the Public School.**

649-3 to 4 **Audio Visual Materials and Methods.**

650-1 to 9 (max. 3 in any one term) **Minor Problems.**

655-3 (formerly 740-4) Education of Children with Learning and Behavior Disorders.
656-3 (formerly 741-4) Clinical Practice in Learning Disability I.
657-3 (formerly 742-4) Clinical Practice in Learning Disability II.
658-4 to 9 Practicum in Special Education.
661-3 Principles of Guidance.
662-3 Pupil's Personality Problems.
663-3 Mental Health.
664-3 to 4 Evaluation.
670-1 to 6 Curriculum and Instruction Workshop.
676-1 to 5 Current Issues in Reading Instruction.
678-9 Workshop in Community Resources.
701-4 Advanced Educational Psychology.
702-4 Social Foundations of Education.
703-4 Philosophy of Education.
712-3 to 4 Elementary School Curriculum (K-6).
716-3 to 6 Educational Investigations in Reading and Languages.
718-3 Teaching and Supervision of Elementary School Mathematics.
719-3 Supervision of Student Teachers.
723-3 Family Financial Security.
724-3 Foundations of Business Education.
725-3 Administration and Supervision in Business Education.
726-3 Programs in Business Education.
727-3 Curriculum Trends in the Basic Business Subjects.
728-3 Curriculum and Materials in Economic Education.
729-3 Curriculum Trends in Bookkeeping and Data Processing.
730-3 Curriculum Trends in the Technical Business Subjects.
731-3 to 4 The High School Curriculum.
732-3 The Middle Grades Curriculum.
733-4 Improvement of Teaching in the Secondary School.
734-4 Analysis of Teaching.
738-3 Supervision of Secondary School Mathematics.
743-3 to 4 Supervision of Teaching.
744-3 Curriculum Analysis.
745-4 Curriculum Development in the Public School.
748-4 Administration and Supervision of the Audio-Visual Program.
749-4 Developing Materials for Classroom Instruction.
751-3 Educational Statistics I.
752-3 Educational Statistics II.
753-3 Educational Statistics III.
754-3 to 4 Research Design and Analysis.
755-1 to 5 Research Projects.
756-3 Introduction to Educational Research.
761-3 Psychometrics.
762-3 Processes of Career Development.
763-3 Theories and Techniques of Counseling.
764-3 Diagnostic Methods and Principles for Visiting Teachers.
765-3 Pupil Personnel Services in the Schools.
766-3 Occupational and Educational Information.
767-3 Group Processes in Counseling and Guidance.
768-3 Community Resources in Counseling and Guidance.
769-3 Guidance Services in the Elementary School.

770-1 to 3 (max 9) Independent Reading.
783-3 School Law and Finance for School Principals.
790-3 Practicum in School Administration.
791-1 to 4 Seminar in Educational Administration.
795-3 The Middle School Principalship.
796-3 to 5 Organization and Administration of Public Schools.
797-3 The Elementary School Principalship.
798-3 The Secondary School Principalship.
799-3 to 6 School Surveys.
801-3 Current Issues and Problems in Education.
802-3 Comparative Education.
810-3 to 6 Seminar in Elementary Education.
816-3 Individualized Reading.
817-3 Organization and Supervision of the Reading Program.
829-6 Internship in School Psychology.
834-3 Practicum in Supervision.
840-3 to 12 Seminar in Curriculum and Supervision.
850-3 Seminar in Special Education.
854-3 Intellectual Assessment for School Psychologists.
855-3 Individual Assessment of Learning Disabilities.
856-3 Individual Assessment of Behavior and Personality Disorders.
857-3 Classroom Implications of Psycho-Educational Assessment.
860-3 to 6 Advanced Seminar in Guidance.
861-3 Individual Intelligence Testing I.
862-3 Individual Intelligence Testing II.
864-3 865-3 Practicum in Counseling I (or II).
866-3 Practicum in Group Counseling.
868-3 The Role and Function of the School Psychologist.
869-3 Student Personnel Administration in Higher Education.
899-1 to 9 Thesis.
981-3 (formerly 781-4) School Buildings and Equipment.
982-3 (formerly 782-4) School Law.
992-3 (formerly 792-4) The School Administrator's Public Relations.
993-3 (formerly 793-4) School Finance.

Engineering (EGR)

141-3 Development of Engineering and Technology. An introduction to the history and concepts of machine design and to the relations between machines and culture. Emphasis is placed on the dependence of a complex culture upon the machines which serve it. The relations between engineering and science are explored in several subject areas. Open to any student in the university.

142-3 Engineering Analysis. By addressing real life problems, this course presents engineering problem solving as a process of problem definition, model selection, and solution evaluation. The course emphasis is on the mechanics of problem solving. Problems are taken from economics, environmental science, marine science, mechanics, etc. Prerequisite: MTH 130, 131 or equivalent.

143-2 Engineering Laboratory. An introductory laboratory course which develops skills in engineering methods, equipment operation, and report writing. Prerequisite: EGR 142. 1 hr. lect., 3 hrs. lab.

144-1 Engineering Graphics. The solution of engineering graphics and design problems such as charts and graphs, orthographic projections, pictorial sketching, sections, dimensioning, isometric drawings, and preliminary engineering design concepts. No prerequisite.

212-4 Statics. Forces, resultants, components, equilibrium of particles, equilibrium of rigid bodies, centroids and centers of gravity, analysis of structures, friction, moments of inertia. Prerequisite: PHY 240, concurrently with MTH 231.

213-5 Dynamics. Kinematics of particles and rigid bodies; force, mass and acceleration; work-energy for particles and rigid bodies; impulse-momentum for particles and rigid bodies; mechanical vibrations. Prerequisite: EGR 212.

300-3 Technology and Society. A study of important developments in engineering and technology and their interrelations with society and human values. Significant historical events in technology will be investigated and their beneficial and adverse social consequences will be analyzed. The course culminates in a study of contemporary technological developments and an assessment of their possible impacts upon society. Open to junior-level students in all divisions.

313-5 Strength of Materials. Axial and shear stresses and strains; biaxial loading; torsion of circular shafts; shear and bending moment diagrams; deflection of beams; combined stresses, theories of failure; column theory. Prerequisite: EGR 212.

315-4 Thermodynamics. A study of classical thermodynamics with primary emphasis on the application of the first and second laws to thermal systems. Introduction to physical and chemical equilibria. Prerequisite: PHY 242.

316-3 Transport Systems. Basic concepts dealing with Momentum transfer in laminar and turbulent flow, thermal energy in solids and fluids and mass transfer by diffusion in gases, liquids, and solids are studied. Prerequisite: MTH 333, EGR 315.

317-4 Fluid Dynamics. Principles involved with physical phenomena are emphasized. Equations, such as the continuity, energy, momentum and motion, are derived and applied to particular problems. The student will solve problems in hydrostatics, one-dimensional (with and without friction), potential and supersonic flow using the equations and principles introduced. Prerequisite: EGR 315 or permission of instructor. 4 hrs. lect.

321-5 Linear Systems I. Linear systems, in general, deals with the mathematical description of linear systems via the writing and solution of equations. Linear Systems I emphasizes electrical systems while using concepts and techniques common to all systems analysis. Included are the writing and solution of circuit equations, work and power, equivalent circuits and analogies, transfer functions, resonance, superposition, LaPlace transforms, and Fourier series. Prerequisites: MTH 233 and PHY 242. 4 hrs. lect., 2 hrs. recit.

322-5 Linear Systems II. Linear Systems II diversifies and extends the concepts and techniques of systems analysis used in Linear Systems I (EGR 321). It deals with the mathematical description of a wide variety of system types including mechanical, electrical, thermal, and hydraulic, with emphasis on mechanical systems. Material covered includes the writing of equations describing the system and the solution of these equations by various means including analytical methods, electronic methods using analog and digital computers, and graphical phase plane techniques. Prerequisite: EGR 321. 4 hrs. lect., 3 hrs. lab.

323-4 Linear Systems III. This course generalizes, ties together, and extends the techniques of analysis developed in EGR 321 and 322. Systems are studied using matrix techniques, LaPlace transforms, Fourier series, transfer functions, block diagrams, and signal flow graphs. Prerequisite: EGR 322. 3 hrs. lect., 3 hrs. lab.

327-3 Introduction to Analog Systems. Electrical and mechanical analog computing components, solutions to algebraic and differential equations, time and amplitude scaling, simulation techniques. Prerequisite: EGR 321. 2 hrs. lect. 3 hrs. lab.

341-4 Electronic Devices. Introductory study of basic solid-state and vacuum electron devices. Includes fundamentals necessary for comprehension and further study of modern engineering electronics. Major topics are: carrier flow in conductors and semiconductors, p-n junction theory, vacuum and semiconductor diodes, bipolar junction transistors, field effect transistors and multigrid vacuum tubes, introduction to amplifiers. Prerequisite: EGR 321 or permission of instructor. 3 hrs. lect., 3 hrs. lab.

345-5 Electromagnetics. Electrostatics and dielectrics. Magnetic fields; induced electromotive force; magnetic materials. Maxwell's equations and their physical interpretation and application. Plane waves in free space and in matter. Guided waves and radiation. Prerequisite: EGR 322, MTH 333.

350-4 Introduction to Mechanical Design. A study of the application of the general principles and empirical relationships of mechanics of solids to the creative design of machines. Prerequisites: EGR 313.

403-4 (see also 603-4) Measurement Systems. Study of general concepts of measurement instrumentation of physical quantities and the study of specific measuring devices for motion, force, torque, pressure, sound, flow, and temperature measurement. Prerequisite: EGR 322 or permission of instructor. 3 hrs. lect., 3 hrs. lab.

411-4 (see also 611-4) Advanced Dynamics. Kinematics of a particle in three dimensions for various coordinate systems, fixed and moving. Dynamics of a particle and system of particles including work-energy and impulse-momentum. Kinematics of general rigid body motion. Principal axes of inertia. Eulerian angles. Dynamics of general rigid body motion. Lagrange's equations. Prerequisite: EGR 213.

415-3 (see also 615-3) Advanced Thermodynamics. An extension of basic thermodynamic concepts: first law, second law, physical equilibrium, chemical equilibrium, and statistical thermodynamics. Prerequisites: EGR 315 and permission of instructor.

421-5 (see also 621-5) Communication Theory. The analysis of linear systems by the Fourier transform and the time convolution integral methods. Introduction to information theory. Comparative evaluation of various analog and pulse modulation techniques. Selected topics from radar theory and electro-optics as well as an introduction to random process theory. Prerequisite: EGR 322.

423-4 (see also 623-4) Energy Conversion. Study of important new developments in the field of energy conversion. Thermoelectric, photoelectric, thermionic, electromechanical, and electrochemical systems will be studied. Prerequisite: EGR 315, EGR 322.

425-4 Control Systems I. An introduction to control systems using state variables and classical analysis. Closed loop system representation, block diagrams, time response, and frequency response are treated. Prerequisite: EGR 322.

426-4 Control Systems II. System stability and closed loop response are analyzed using Routh-Hurwitz, Nyquist and root locus techniques. System specifications and compensation are realized using state variables and classical analysis. Prerequisite: EGR 425.

430-4 Distributed Systems. Distributed constants and traveling waves in various types of physical systems. A-C steady-state in distributed systems. Phase and group velocities. Reflections, standing wave ratios, and impedance matching techniques. Prerequisite: EGR 322, MTH 332, 333. EGR 345 is suggested as a prerequisite but is not required.

432-3 Optimization Techniques. Concepts of minima and maxima. Linear programming: simplex method, sensitivity, and duality. Transportation and assignment problems. Dynamic programming. Prerequisites: MTH 233, 355, and EGR 321 or permission of instructor.

433-4 Reliability Analysis. Elements of probability theory: events, probability axioms, random variables, discrete and continuous distributions, moments and characteristics functions. Applications of mathematical tools: component and system failure models. Marginal failures: initial tolerances, environmental drifts, transfer functions and sensitivities. Passive and active redundancy techniques. Repairable systems: maintainability, availability, and reliability acceptance. Prerequisite: EGR 322.

435-3 Synthesis of Linear Systems. Positive real functions and their relation to physical realizability. Zero-pole structure of network impedance functions; properties and applications of frequency selective network; filter design by approximating functions. Prerequisites: EGR 322, 421, MTH 332, 333, and consent of instructor.

441-4 Electronic Circuits. Theory and applications of basic electronic circuits. Includes transistor theory, junction transistor and FET amplifiers, transistor and vacuum tube models, feedback principles, regulators, and switching circuits. Prerequisite: EGR 341. 3 hrs. lect., 1 hr. lab.

442-3 Digital Computer Design. Functional design of a digital computer, including arithmetic and control units. Counters, adders, accumulators, multipliers, dividers, and memory devices and their logic. Prerequisite: EGR 450.

444-3 Advanced Electronic Circuits. Modular circuit concepts fundamental to analysis and applications of linear and digital integrated circuits. Topics include active filters, tuned amplifiers, feedback amplifiers and oscillators, operational ampliers, IC fabrication, basic digital logic and linear integrated circuits. Prerequisites: EGR 341, 441 or equivalent.

449-4 Pulse and Digital Circuits. Design and analysis of pulse and switching circuits including: linear wave shaping; diode wave shaping; logic types, DTL, DCTL, RTL, TTL, and ECL; bistable, astable, and monostable multivibrators; voltage comparators; Schmitt triggers; blocking oscillators; and magnetic core switching. Prerequisite: EGR 441. 3 hrs. lect., 3 hrs. lab.

450-3 Switching Theory and Circuits. Logical design and simplification of combinational and sequential switching circuits with emphasis on the practical rather than abstract. Prerequisite: Senior standing or consent of instructor.

460-3 Design and Analysis of Engineering Experiments. This course is an introduction to the planning and analysis of engineering experiments. It covers basic topics required for experimental work and their applications to engineering problems. Included is a brief coverage of basic statistics, probability distributions, tests of hypothesis, linear regression and analysis of variance, and the application of these tools using randomized block, factorial, and fractional factorial experimental designs in the investigation of engineering problems. Prerequisite: senior standing or consent of instructor.

490-3, 491-5 Senior Problems. Independent investigation of contemporary engineering problems under the guidance of an instructor. Topics are selected to meet the needs and interests of the students. Research of professional literature and submission of an engineering report is required. Prerequisite: Senior standing.

499-1 to 5 Special Problems in Engineering. Special problems in advanced engineering topics. Prerequisite: Consent of instructor.

603-4 Measurement Systems
611-4 Advanced Dynamics.
615-3 Advanced Thermodynamics.
621-5 Communication Theory.
623-4 Energy Conversion.
625-4 Control Systems I.
626-4 Control Systems II.
630-4 Distributed Systems.
632-3 Optimization Techniques.
633-4 Reliability Analysis.
635-3 Synthesis of Linear Systems.
641-4 Electronic Circuits.
642-3 Digital Computer Design.
644-3 Advanced Electronic Circuits.
649-4 Pulse and Digital Circuits.
650-3 Switching Theory and Circuits.
699-1 to 5 Special Problems in Engineering.
701-3 Linear Systems I.
702-3 Linear Systems II.
710-3 Digital Signal Processing.
721-3 Random Processes.
724-3 Foundations of Optimization Theory.
725-3 Principles of Modern Control Theory.
750-3 Switching and Finite Automata Theory I.
751-3 Switching and Finite Automata Theory II.
761-3 Probability and Stochastic Processes I.
762-3 Probability and Stochastic Processes II.
763-3 Dynamic Stochastic Systems Modeling.
830-3 Nonlinear Systems.
880-3 Selected Topics in Systems Engineering.
890-1 to 5 Special Problems.
899-1 to 9 Thesis.

English (ENG)

111-4 **Composition.** An expository writing course stressing firm principles of organization and development. Designed to prepare freshmen for the demands of college level writing in all areas.

112-4 **Composition.** An expository writing course with concentration on content. Designed to prepare freshmen for the demands of college level writing in all areas.

190-3 **Issues and Ideas in Literature.** Readings in literature dealing with a single theme or a specific problem, for example: Crisis and Confrontation in American Literature, The Images of the Hero in Literature, The Supernatural and Occult in Literature, and Sex and Censorship in Literature.

201-3 **Contemporary Literature.** Readings in American and British fiction, poetry, and drama of the present and the recent past, for example: American Novel since 1945, Literature of the Absurd, Protest Literature, and Contemporary Poetry.

202-4 **The Literary Tradition.** Readings in British and American

literature, for example: Shakespeare, American Masterpieces, British Novel, and Readings in Biography.

203-4 World Literature. Readings in world literature, for example: Russian Novel, Africa, The Age of Reason, and Existentialism.

204-4 Black Literature. Readings in literature by black writers, for example: The History of Black American Literature, Confrontation, Black Poetry, and Harlem Renaissance.

Note: All following English courses at the 200 and 300 levels are open to sophomores who have completed the minimum prerequisite of ENG 111, 112.

210-4 Newswriting and Media. Introduction to writing for the various news media and to their unique features; special attention to newspaper writing. Prerequisite: successful completion of ENG 111, 112.

211-4 News Editing. Introduction to newspaper make-up and design and to editing the news for the various media with special attention to newspaper editing. Prerequisite: ENG 210-4.

331-3 Business Writing. Techniques in business writing with special attention to improving mechanical skills, reviewing the forms of business writing, acquiring research techniques, and analyzing business and technical prose.

Major Courses

Unless otherwise specified, successful completion of freshman English is the minimum prerequisite for all major courses. Bachelor of Arts degree candidates earning an English major must meet the minimum major requirements from courses in this group. For majors, ENG 250, 251 are prerequisites to enrollment in other literature courses in this group.

220-4 Introduction to Creative Writing. A beginning course for students interested in creative writing, with special attention to the foundations of the short story and poetry. Prerequisite: ENG 111, 112 or permission of the instructor.

221-4 Poetry Writing. Fundamentals of verse writing: practice in traditional and contemporary concepts of poetic form. Prerequisite: ENG 111, 112 or permission of the instructor.

222-4 Short Story Writing. Theory and practice of the techniques of fiction, emphasizing the reading of literary models and the writing of original stories. Prerequisite: ENG 111, 112 or permission of the instructor.

223-4 Dramatic Writing. Theory and practice of the techniques of dramatic writing, emphasizing the writing of original plays. Prerequisite: ENG 111, 112 or permission of the instructor.

250-4, 251-4 Introduction to the Study of Literature. Designed to introduce English majors to independent analytical reading, to basic literary concepts and techniques, and to the vocabulary of literary study. The course provides practice in elementary critical and scholarly skills through the study of fiction (250) and of poetry and drama (251).

260-4 Advanced Composition. Practice in various types of expository writing; special attention to rhetorical and stylistic considerations.

321-4 Creative Writing Workshop. A workshop for qualified students who wish to develop further their abilities in creative writing. Students will work closely with the instructor on advanced projects in poetry, short story, drama, or the novel. Prerequisite: either ENG 221 or 222 or 223 or permission of the instructor. May be repeated for credit.

341-4 Composition for Secondary Teachers. Combines study and teaching of composition with practice in writing. Emphasis on

expository writing with special attention given to evaluation of writing and the problems of secondary school teachers.

342-4 Composition for Elementary Teachers. Study and practice of writing with special attention to the informative and creative writing taught in the elementary schools and to the problems of teaching writing to elementary school students.

351-4 Major English Writers: Chaucer to Shakespeare. Representative works of major English writers of the medieval period and the Sixteenth Century, including Chaucer, the Pearl-poet, Malory, Sidney, Spenser, Marlowe, and Shakespeare.

352-4 Major English Writers: Donne to Johnson. Representative works of major British writers of the seventeenth and eighteenth centuries including Donne, Jonson, Milton, Dryden, Congreve, Swift, Addison, Steele, Pope, Fielding, Gray, and Johnson.

353-4 Major English Writers: Blake to Arnold. Representative works of major Romantic and Victorian writers, including Blake, Austen, Wordsworth, Coleridge, Keats, Carlyle, Dickens, Tennyson, Browning, and Arnold.

354-4 Major English Writers: Hopkins to Eliot. Representative works of major English writers of the modern period, including Hopkins, Hardy, Housman, Shaw, Conrad, Yeats, Joyce, Lawrence, Woolf, and Eliot.

355-4 Major American Writers: Poe to Dickinson. Representative works of major American writers of the Nineteenth Century, including Poe, Emerson, Thoreau, Hawthorne, Melville, Whitman, and Dickinson.

356-4 Major American Writers: Twain to Faulkner. Representative works of major American writers of the late Nineteenth and Twentieth Centuries, including Twain, James, Robinson, Dreiser, Fitzgerald, O'Neill, Frost, Hemingway, and Faulkner.

360-4 Introduction to Linguistics. A survey of the major branches of linguistics and of the history of linguistics; articulatory phonetics; phonemics and morphemics; theory of transformational grammar and techniques of rule writing; linguistic geography.

Note: The series of "Studies" courses is intended to provide a wide range of courses approaching literature from a variety of significant viewpoints. Because a large number of courses can be offered under each "Studies" number, students should consult the department for a list and brief description of the particular courses that will be offered during a given academic year. Completion of at least three of the following courses is prerequisite to enrollment in the "Studies" courses: ENG 351, 352, 353, 354, 355, and 356.

410-4 Studies in English Literary History. Courses offered under this number provide intensive study of English literature from the point of view of literary history and are intended to develop an understanding of the historical approach to literature and an ability to deal critically with historical generalizations about literary periods and movements.

420-4 Studies in American Literary History. Courses offered under this number provide intensive study of American literature from the point of view of literary history and are intended to develop an understanding of the historical approach to literature and an ability to deal critically with historical generalization about literary periods and movements.

430-4 Studies in Major English Writers. Courses offered under this number provide intensive study of the work of single, major English authors — such as Shakespeare, Chaucer, Milton, and others — and are intended to develop an understanding of individual works of literature in the context of an author's life and total literary production.

440-4 Studies in Major American Writers. Courses offered under this number provide intensive study of the work of single, major American authors — such as Melville, Whitman, James, and others — and are intended to develop an understanding of individual works of literature in the context of an author's life and total literary production.

450-4 Studies in Literary Types and Modes. Courses offered under this number provide intensive study of important literary forms such as poetry, the novel, comedy, tragedy, satire, and the epic, and are intended to develop an understanding of the formal aspects of literature as approached theoretically, analytically, or historically.

460-4 Studies in Literary Themes. Courses offered under this number provide intensive study of literary works in terms of significant and recurring literary themes as they can be traced in various eras, cultures, and literary traditions. Courses offered under this number include:

The Religious Quest in Contemporary Literature. (Taught jointly with the Department of Religion: see REL 460-4/660-4). An examination of the explicit and implicit religious and ethical positions which are found in the works of selected contemporary authors, e.g. Baldwin, Böll, Beckett, Camus, Faulkner, Salinger, Sartre, Updike, Wiezel and an introduction to various critical approaches to literature. Prerequisite: consent of instructor.

470-4 Studies in Literary Criticism. Courses offered under this number provide intensive study of the theoretical, practical, and historical aspects of literary criticism in order to develop an understanding of important critical questions and approaches.

477-1 to 6 Workshop. Intensive study of selected special topics or problems designed to meet the particular needs of participating students. Specific titles to be announced for each workshop. May be repeated for credit subject to departmental, divisional, and university limits. Prerequisite: junior or senior standing or permission of instructor.

480-4 Studies in Linguistics. Courses offered under this number provide intensive study of the English language and linguistics and are intended to develop an understanding of the historical, comparative, and descriptive approaches to the study of language and of the nature and value of their findings. Prerequisite: ENG 360 or permission of the department.

490-4 Studies in English Education. Courses offered under this number focus on the theoretical issues and practical problems of the teaching of English at all levels and are designed to meet the needs of teachers of literature, language, and composition.

491-1 to 3 Directed Reading. Supervised reading in special areas of American, English, or world literature in translation and English language and linguistics not available through course structure. Limited to seniors with a 3.0 cumulative average and a strong interest in or need for independent study. To be arranged with the department chairman.

497-4 Linguistics of Language Arts. A linguistic analysis of modern English with special attention to features of phonology, morphology, and syntax basic to the teaching of reading and composition. Prerequisite: junior or senior standing.

Graduate Courses

610-4 Studies in English Literary History

620-4 Studies in American Literary History.

630-4 Studies in Major English Writers.

640-4 Studies in Major American Writers.

650-4 Studies in Literary Types and Modes.
660-4 Studies in Literary Themes.
670-4 Studies in Literary Criticism.
677-1 to 6 Workshop.
680-4 Studies in Linguistics.
697-4 Linguistics of Language Arts.

Finance (FIN)

103-3 Personal Finance. Management of personal income with emphasis on family financial planning, including budgeting, income taxes, types of insurance, and forms of investment. Open to all non-business majors and to freshmen and sophomores majoring in business administration.

301-3 Business Finance I. An introduction to the basic concepts, principles, and analytical techniques of financial management. Emphasis on planning and managing assets. Topics include formulating financial objectives, organizational form, and tax environment; current asset management; short-term financial analysis forecasting and planning; and capital budgeting. Prerequisites: EC 201, 202, 203; ACC 201, 202, 203. Offered every quarter.

302-3 Business Finance II. A continuation of Business Finance I. Emphasis on financial structure decisions. Topics include cost of capital, financial leverage, management of short-, intermediate-, and long-term funds, dividend policy, valuation, and mergers. Prerequisite: FIN 301.

303-3 Case Problems in Financial Management. The application of basic financial concepts and analytical techniques to financial decision-making. Extensive use of cases. Prerequisite: FIN 301, 302. Offered in the spring.

305-3 Personal Financial Planning. Course designed for non-business majors concerned with financial problems encountered in managing individual affairs; family budgeting, installment buying, insurance, home ownership, and investing in securities. No prerequisite. (No credit for juniors and seniors in the Division of Business Administration.)

331-4 Real Estate. Basic orientation to the broad field of real estate. Principles, practice, and issues of real estate. The real estate market, types of real property interest, contracts, deeds, financing, home ownership, leases, investment, management, purchasing, selling, role of real estate agent, search, examination, registration of title, title closing, the valuation process, city planning, zoning, public housing, urban renewal, and state regulation. Major issues and trends involving economic, political, and social implications in the field of real estate are also analyzed. Recommended for all students.

351-3 Risk and Insurance. The concept of risk, its implications in decision-making, and its effects on social and economic activities. Particular emphasis is given to the use of insurance as a method of solving the problems of risk that are encountered by all segments of society. The course is consumer oriented and open to all students. No prerequisite.

352-3 Life and Health Insurance. The problem of economic insecurity resulting from premature death, disability, and old age is explored. The general theory of life and health insurance, its economic and social implications, and the underlying principles and reasons for various contract provisions, underwriting practices, and legal doctrines is analyzed. Individual and group approaches are used.

353-3 Property and Liability Risk Management. The course consists

of an analytical study of important property and casualty coverages; insurance management problems facing business firms and individuals; various methods of treating property risks such as fire, windstorm, flood, riot, theft, etc.; marine and inland marine, business interruption, corporate suretyship, personal and corporate liability, automobile, workmen's compensation, multiple line policies, and other types of coverage. Major issues and trends are also analyzed. Prerequisite: FIN 351 or permission of the instructor.

401-3 Investment Management. Policy decision-making in the management of an investment portfolio. Discussion of types of securities and grading into risk classes. Emphasis on types of investment policy and supervision of a securities portfolio. Prerequisites: EC 301 and FIN 302.

402-3 Security Analysis. Principles and methods of security analysis. Methods of evaluating current business outlook; financial analysis of individual securities including analysis of stocks; analysis of bonds, preferred stock, and convertible securities. Prerequisite: ACC 304.

411-3 Financial Institutions. Identification and analysis of problems of management, organization, capital structures, and credit analysis of commercial banks, savings and loan associations, life insurance companies, sales finance companies, and investment banking with opportunity for students to accomplish special research in area of choice. Prerequisites, FIN 301, 302, and EC 301.

412-3 Commercial Banking. Problems of commercial banking discussed from point of view of bank management; determination of proper size of asset reserves; credit analysis required for various kinds of bank loans; investment policies for commercial banks; problems of equity reserves and capital account. Prerequisites: FIN 301, 302.

462-3 Estates, Wills and Trusts. Problems in the creation, management, and conservation of an estate. Personal and corporate trust work. Prerequisites: FIN 301, 302.

477-1 to 3 Finance Studies. Independent reading and research in selected areas of finance. Prerequisites: senior standing in finance and department chairman's approval.

480-3 Money and Capital Markets. Analysis of money and capital markets. Flow of funds and economic factors influencing flow of funds. Examination of markets for government securities, corporate debt, corporate equities, and corporate and individual mortgages. Prerequisites: EC 301, FIN 302.

490-3 International Financial Management. Designed to: (1) identify those aspects of financial management that are altered or complicated by business transactions that transcend national borders; (2) extend the theory of domestic financial management in order that the added international variables can be explicitly included in the manager's decision parameters; and (3) develop the analytical skills and perspective necessary to fulfilling the responsibilities of financial management in a multinational setting. Prerequisite: FIN 301, 302.

Graduate Courses

523-3 Family Financial Security.

621-3 Graduate Survey in Financial Management.

701-3 Investments Seminar.

702-3 Financial Institutions Seminar.

710-3 Analysis of Securities.

720-3 Bank Management.

722-3 Insurance and Risk Management.

731-3 Land Economics and Real Estate Administration.

741-3 Financial Management I.
742-3 Financial Management II.
743-3 Seminar in Financial Management.
770-4 Financial Policy for Managers.
771-4 Risk Management.
781-1 to 3 Special Studies in Finance.
790-3 Seminar in International Financial Management.
799-6 to 9 Thesis.

French

See Modern Languages.

Geography (GEO)

Lower Division Courses

All undergraduate geography courses are designed to fulfill Group One, Area Three of the General Education Requirement. Prerequisites for upper division courses must be met by students electing these courses for the General Education Requirement.

101-3, 102-3, 103-3 Introduction to Systematic Geography. 101: The processes and distribution of the physical elements of the earth. 102: The spatial organization of the cultural elements of man's environment. 103: The geographic significance of man's economic activities. These three courses may be taken in any order or concurrently. Credit is granted for any course separately.

201-3, 202-3 World Regional Geography. The cultural, social, economic, and political developments of representative regions of the western 201 and non-western 202 world in relation to geographic conditions.

225-3, 226-3 Economic Geography. Geographic and economic factors in the development of major industrial areas of the world with emphasis on the location of primary raw material production 225 and the function of manufacturing and commerce 226.

271-3 Conservation of Resources. Economic and geographic appraisal of resource conservation in the world, emphasizing the analytic approach to the solving of such contemporary problems as human population growth, environmental quality, recreation and open space, and resource management.

Upper Division Courses

302-3 Political Geography. Geographic appraisal of the factors influencing the evolution, structure, resource base, function, and associations of political units.

322-3 Geography of Landforms. A study of the distribution of the world's landforms with emphasis on the processes and systems functioning to shape the natural landscape. Attention is given to the three-way interaction among landforms, other physical factors, and man.

332-3 Climatology. The observation, measurement, and analysis of climatic elements and controls, climatic classification, and the relation of climate to man's economic and social activities.

343-3 Urban Geography. Origin and growth of cities and geographic

principles related to the distribution, function, structure, and situation of urban agglomerations.

354-3 Geography of Manufacturing. An examination of the factors of industrial location utilizing empirical examples. Included is an introduction to the basic theories and techniques underlying the decision process in manufacturing locations.

365-5 Cartography. Principles of map projections, their construction, and use in illustrating geographic relationships. Included are methods of design, compilation, and graphic representation of data.

391-3 Religions and Geography of India. (Offered jointly with the Department of Religion; see also REL 391) The study of Hindu religious thought, its origins and geographical diffusion, and the role of Hindu thought in the spatial organization and expression of Indian culture, both historically and currently.

402-3 Geography of the United States. An analysis of the regional development of the United States with particular emphasis on the spatial relationship among the physical, political, economic, and social factors.

404-3 Geography of Europe. The geography of Europe considered by subregions of the continent, focusing on the spatial relationships which influence historical, cultural, economic, and political patterns.

434-3 Climatology for Earth Science Teachers. The interaction of weather and climate with the various earth systems. Include observation, measurement, and analysis of meteorological elements and controls. Registration limited to nongeography majors.

445-5 Advanced Cartography and Map Interpretation. The study and practice of compilation processes for the development of maps and models utilizing primary data sources. Prerequisite: GEO 365 or consent of instructor.

450-3 Geography of Transportation. An analysis of the spatial aspects and structural characteristics of transport networks, the movement of goods, and their relationship to regional structures. Prerequisite: consent of instructor.

458-3 Human Perception in Resource Management. A study of the spatial factors influencing human response and decision-making in resource use schema. Attention is given to the manner in which man perceives environmental elements and apprehends resources and natural hazards such as floods and droughts.

460-3 Advanced Systematic Geography. Geographic factors of various topics will be analyzed. Specific topic or field of concentration announced each time course is offered. A maximum of 15 credits is permitted. Prerequisite: consent of instructor.

470-3 Advanced Regional Geography. Physical and cultural analysis of major and minor world regions. Specific region for study announced each time course is offered. A maximum of 15 credits is permitted. Prerequisite: consent of instructor.

481-1 to 5, 482-1 to 5 Special Problems in Geography. Research and problems designed for the specific needs and talents of the student. Prerequisite: Consent of instructor.

Graduate Courses

602-3 Geography of the United States.

604-3 Geography of Europe.

634-3 Climatology for Earth Science Teachers.

645-5 Advanced Cartography and Map Interpretation.

650-3 Geography of Transportation.

658-3 Human Perception in Resource Management.

660-3 Advanced Systematic Geography.

670-3 Advanced Regional Geography.
681-1 to 5, 682-1 to 5 Special Problems in Geography.
691-3 Religions and Geography of India.

Geology (GL)

101-4 **Introductory Geology I.** An introduction to the physical and chemical processes that have operated to produce the earth, its minerals, rocks, land forms, and economic mineral fuel deposits. 2 75-minute lect., 1 2-hr. lab.

102-4 **Introductory Geology II.** An introduction to the history of the earth. Physical and biological evidence recorded in the rocks is used to interpret the history of the earth. 150 minutes/week lect., 120 minutes/week lab. Rec. prep.: GL 101.

103-4 **Topical Concepts in Geology.** Topics of current interest and their relationships to geology will be described in the lecture. A recitation section will consist of demonstrations, discussions, and exercises pertinent to the particular topic. Prerequisite: GL 102. 3 50-minute lect., 1 50-minute recit.

151-5 **Physical Geology.** The study of the physical and chemical processes occurring on and within our earth. Prerequisite: two years of high school science. 2 75-minute lect., 1 3-hour recit.

152-5 **Historical Geology.** A study of the history of the earth, including the geologic history of all earth's continents. Course includes review of the origin of the earth, the development of the rock record, and the evolution of diverse life forms to produce a biological and physical history of the earth. Rec. prep.: GL 151. Lect., 150 min./week; lab. and recit., 180 min./week.

Advanced Courses

201-3 **Water Resources.** A study of the hydrologic cycle emphasizing past, present and future problems in flood control, water pollution, and water resource development. Prerequisite: GL 102. 2 lect. (75 minutes each). Not open to students with credit in GL 451.

203-4 **Minerals and Rocks.** The structure, symmetry, and composition of minerals. The composition, classification, and origin of rocks. Mineral and rock identifications are emphasized in the laboratory. Rec. prep.: GL 102 or 152. 2 lect., 1 lab.

204-3 **Earth Resources and the Environment.** A study of the effects of exploitation of earth resources on the environment and effects of population and urban growth on vanishing assets. The location and conservation of earth resources in relation to urban expansion will be considered. Rec. prep. GL 102. Lects.

210-4 **Environmental Geology.** The impact and interrelationship of geologic processes on the quality of life and the works of man. Rec. prep.: GL 102. Lects., Field trip.

301-5 **Crystallography and Optics.** The theory of crystal optics and the determination of optical constants of crystals by use of the polarizing microscope. Emphasis on the relationship of crystal symmetry and optical properties. Consent of instructor required.

302-4 **Earth Resources in World Affairs.** A brief survey of the geologic and geographic distribution of earth resources will be covered. Investigation and discussions will be made into the stimulus of the erratic distribution of earth resources on world history. Prerequisite: consent of instructor. Lects., and outside work.

303-2 **Geologic Literature and Research Methods.** Introduction to the literature sources in the geologic sciences. Critical analysis of

material in the literature is stressed. A research paper is required. Lect. Rec. prep.: GL 102.

305-4 Mineral Deposits. Genesis, classification, and description of economic mineral deposits exclusive of petroleum deposits. Examination of the role of economic deposits in world affairs. This course is designed for non-geology majors. Rec. prep.: GL 103 or equivalent. Lects.

311-5 Introduction to Structural Geology. The concepts of stress, strain, and material behavior are used to describe and explain how rocks deform. Depositional structures will also be discussed. Rec. prep.: GL 103 or equivalent. Lects., recit., lab.

312-5 Intermediate Structural Geology. Development of the theory of rock behavior. Finite strain and gravity tectonics will be discussed. Prerequisite: GL 311. 3 lect. (50 minutes each), 1 recitation (50 minutes), 1 lab.

350-4 Engineering Geology I. Principles of engineering geology; application of geologic principles to engineering works. The impact and interrelationship of geologic processes on man's construction efforts. Rec. prep.: GL 103. Lects., lab.

351-4 Engineering Geology II. Engineering geology case studies. Review of classic and unusual engineering geology projects which have been chosen from both published and unpublished sources especially to illustrate principles, problems, and solutions in this field. Rec. prep.: GL 350. Lects., lab.

399-2 to 6 Special Problems. Research problems designed for specific needs and talents of the student. Prerequisite: junior standing.

400-3 Introduction to Earth Physics. Essentials of the gravity, magnetic, seismic, electrical, and radioactive properties of the earth with discussions on the applications of those properties in the solution of geologic problems. Not open to students with credit in 422. Rec. prep.: GL 102.

401-3 Astronomy. The development of the current concepts and viewpoints of astronomy. Prerequisite: senior standing.

410-5 Mineralogy. Discussion of the chemistry and physics of minerals will be done in lectures. The identification of minerals by microscopic, macroscopic, and x-ray techniques will be done in the laboratory. Rec. prep.: GL 301. Lects., lab.

412-5 Petrology. Study of the origin of igneous, metamorphic, and sedimentary rocks. Use of thin sections for mineral identification, microscopic structures, and rock classifications emphasized in the laboratory. Rec. prep.: GL 410, Lects., lab.

413-5 Geochemistry. The principles governing the distribution of the elements within the earth. Introduction to geo-chemical methods of research. Rec. prep.: GL 103, CHM 111, 121, 141. Lects., lab.

414-3 Volcanology. Study of volcanic processes and of features found in volcanic areas. Prerequisite: senior standing or consent of the instructor. Lects., recit.

415-4 Metamorphic Petrology. Study of the petrographic and chemical changes that take place during metamorphism of different rock types will be covered in the lecture. Rock analysis using the petrographic microscope will be done in the laboratory. Rec. prep.: GL 412. Lects., lab.

416-4 X-Ray Techniques. The theoretical and practical aspects of the powder method. Indexing of powder diagrams of substances with lower symmetry. Delaunay reduction. Determination of accurate lattice cell dimensions. Identification of substances. Rec. prep.: GL 301. Lects., lab.

420-3 Tectonics. Existence of large scale tectonic features as demonstrated by current geophysical measurements. Their geologic interpretation. Rec. prep.: GL 102 and consent of instructor. Lects.

422-5 Geophysics. Analytical treatment of the principles of the gravity, magnetic, seismic, electrical, and radioactive properties of the earth and their use in determining the distribution and spatial configuration of rock bodies. Also included is the application of geophysical and petrophysical techniques in the discovery and delineation of ore bodies and fluids in the earth. Rec. prep.: GL 102, PHY 242. Lects., lab.

423-3 (see also PHY 423-3) Geophysics I. Study of the theory, observation, and analysis of seismic and gravitational phenomena as observed on the earth's surface. Rec. prep.: GL 102 and PHY 242. Lects.

424-3 (see also PHY 424-3) Geophysics II. Analytical treatment of the electrical and magnetic properties of the earth and their application to the study of rock bodies. The principles and applications of paleomagnetism. The principles of natural and induced radioactivity and their application to exploration and well logging. Rec. prep.: GL 102 and PHY 242. Lects.

425-3 (see also PHY 425-3) Geophysics III. Laboratory and field exercises analyzing local geologic structures by geophysical methods. Rec. prep.: PHY 423, 424 or GL 423, 424 or GL 422. Lab.

426-1 (see also PHY 426-1) Geophysics Seminar I. Selected topics in geographics centered about regular student presentations. Rec. prep.: PHY 423 or GL 423 or GL 422.

427-1 (see also PHY 427-1) Geophysics Seminar II. Selected topics in geophysics centered about regular student presentations. Rec. prep.: PHY 424 or GL 424 or GL 422.

430-3, 431-3 Invertebrate Paleontology. The morphology, geologic record, and geographic distribution of the major invertebrate groups characterized by significant fossil representation. Completion of a minor individual research project is required. For graduate credit a formal written report on the research project is required. Rec. prep.: GL 102. Lects., lab.

432-4 Micropaleontology. The morphology, taxonomy, identification, and stratigraphic distribution of fossil microorganisms especially foraminifera, ostracods, conodonts, and the microscopic parts of megafossils. Includes techniques for collection and preparation of specimens for study. Individual research project required. Rec. prep.: GL 102. Lects., lab.

433-4 Physical Stratigraphy. Principles, rules, and techniques of correlation. Relationships between surface and sub-surface correlation. Geologic and geophysical correlation techniques are emphasized in the laboratory. Rec. prep.: GL 102. Lects., lab.

434-9 Field Geology. Study of geologic phenomena as illustrated in the field. This requires introduction of mapping techniques and the application of many geologic disciplines to geologic analysis. Rec. prep.: GL 103, 311, or consent of instructor.

435-4 Paleoecology. The interpretation of environments of the geologic past based on the physical, chemical, and biological characteristics of the deposits. Emphasis is placed on recent analogues of past environments. Rec. prep: GL 430, 431, or consent of instructor.

436-4 Biogeochemistry. Study of the effects of organisms in geochemical cycles, and concentration and dispersion of elements on the earth's surface. Individual research projects will be pursued in the laboratory. Prerequisites: GL 413, BIO 113. 2 75-min. lect., 1 180-min. lab.

440-4 Economic Geology. Genesis, classification, and description of economic mineral deposits exclusive to petroleum deposits. Rec. prep:. GL 412 or 413. Lect., lab.

451-4 Hydrogeology. The geology of underground waters, their origin, migration, location, and exploitation. Methods of detecting underground water supplies. Rec. prep.: GL 103, MTH 133. Lects., lab.

460-4 Geological Analysis. The nature of geological data, their source, sampling, collecting, processing, analysis, and interpretation. Practical problems will be solved in the laboratory. Prerequisites: upper-level standing or consent of instructor. 2 75-min. lect., 1 180-min. lab.

499-2 to 6 Special Problems. Research and problems designed for specific needs and talents of the student. Prerequisite: senior standing.

Graduate Courses

506-4, 507-4, 508-4 Earth Science for Teachers.
523-4 Physical Stratigraphy.
530-3, 531-3 Invertebrate Paleontology.
534-9 Field Geology (Summer Field Camp).
600-3† Introduction to Earth Physics.
601-3† Astronomy.
611-5 Optical Crystallography
612-5 Petrology.
613-5 Geochemistry.
614-3 Volcanology.
615-3 Metamorphic Petrology.
616-4 X-ray Techniques.
618-4, 619-4 Igneous Petrology
620-3 Tectonics.
622-5 Geophysics.
623-3 Geophysics I.
624-3 Geophysics II.
625-3 Geophysics III.
626-1 Geophysics Seminar I.
627-1 Geophysics Seminar II.
632-4 Micropaleontology.
635-4 Paleoecology.
636-4 Biogeochemistry.
640-4 Economic Geology.
641-4 Engineering Geology I.
642-4 Engineering Geology II.
643-5 Intermediate Structural Geology.
651-4 Hydrogeology.
670-4 Advanced Crystallography,
671-4 Crystal Structure Analysis I.
672-4 Crystal Structure Analysis II.
673-4 Crystal Structure Imperfections.
699-2 to 6† Special Problems.
710-4, 711-4 Chemical Geology.
714-3, 715-3, 716-3 Nuclear Geochemistry.
726-4, 727-4, 728-4 Advanced Structural Geology.
734-4, 735-4, 736-4 Microfaunal Investigations.
738-4 Paleoenvironments.
740-4 Sedimentary Analysis.
750-4 Numerical Analysis in Geology.
762-4 Groundwater Exploration and Evaluation.
799-1 to 5 Special Problems.
899-2 to 5 Thesis.

†Not available for graduate credit toward the MS degree in Geology.

German

See Modern Languages.

Government

See Political Science.

History (HST)

Lower Division Courses

111-3, 112-3, 113-3 American Civilization. Survey of the interplay of forces that have brought about the evolutionary development of American economic, cultural, and political history from 1492 to the present. A functional and synoptic treatment of America's great historical problems: **111:** Colonial foundations to 1815. **112:** From 1815 to 1896. **113:** Since 1896.

120-3 The Ancient and Medieval Worlds. A survey on an elementary level, designed to acquaint non-history majors with the tripartite Judaiac, Hellenic, and Christian contributions to Western culture, before about A.D. 1350.

121-3, 122-3, 123-3 European Civilization. Survey of our Western culture from the beginning of modern times to the present, with emphasis on art, literature, philosophy, institutions, and great cultural and intellectual movements; the ideas, men, and forces creating modern Western culture: **121:** 1300 to 1715. **122:** 1715 to 1871. **123:** Since 1871.

201-3 Colonial Latin America. Backgrounds, discovery and conquest, and the colonies of Spain and Portugal in the New World.

202-3 Nineteenth Century Latin America. Latin America in revolt and the emergence of the Latin American nations in the nineteenth century.

203-3 Twentieth-Century Revolutions in Latin America. Latin American revolutions in the twentieth century. Concentration on the Mexican Revolution of 1910, the National Revolution of Bolivia, and the 26th of July Movement in Cuba, with some attention devoted to Peron, Vargas, Allende, the Indianist movement in the Andean region, and contemporary guerilla activities.

211-3 Africa South of the Sahara. An examination and evaluation of the geographic, economic, cultural, religious, and political development of the emergent peoples of Africa south of the Sahara. An evaluation of Africa's interactions with the modern European technological and institutional influences with some effort to identify and evaluate the relationships of the United States with countries south of the Sahara. Offered alternate years.

214-3 The Negro in American History. The African Background; the establishment of the Negro in colonial American society; the status of the Negro in nineteenth century America as a slave in the South and freeman in the North; the Abolitionist movement and the Civil War.

215-3 The Negro in American History. The Negro and Reconstruction; the status of the Negro in the post Reconstruction period and early twentieth century; World War I, World War II, Urbanization

and its effects on the Negro community; the movement toward Negro equality from the Truman administration to the present.

218-3 History of Ohio: Prehistoric Times to 1871. Physiographic factors and prehistoric Indians; conflicts among Indians, French, and English in the Ohio country; settlement and growth as a territory; political, economic, and cultural life of the state.
equality from the Truman administration to the present.

219-3 History of Ohio: Since 1871. Social, political, economic, and cultural life in Ohio during the age of growing industrialization and urbanization.

Upper Division Courses

301-3 Ancient America: Theories, Olmec, Toltec, Maya. A study of the social, political, religious, and cultural foundations of the pre-Columbian cultures in America. Major emphasis will be given to the various theories of how man came to the Americas and upon the Olmac, Toltec, and Maya cultures. No prerequisite.

302-3 Ancient America: Aztec and Inca. A study of the social, political, religious, and cultural foundations of the pre-Columbian cultures in America, with emphasis on the Aztec and Inca cultures. No prerequisite.

304-3 History of Mexico: From 1810 to 1876. The development of the Mexican nation with special attention to the War for Independence, Caudillo government, and the reform movement to 1876. Offered alternate years. No prerequisite.

305-3 History of Mexico: Since 1876. The development of the Mexican nation beginning with the dictatorship of Diaz, with special attention on the political, social, economic, and cultural impacts of the Mexican revolution. Offered alternate years. No prerequisite.

306-3 The ABC States, 1810 to the Present. Examination of the national histories of Argentina, Brazil, and Chile, and their relations since the wars for independence. No prerequisite.

321-3 History of England: To 1558. Roman, Saxon, Norman, and Tudor England to Elizabeth I. No prerequisite.

322-3 History of England: From 1558 to 1815. The reign of Elizabeth I, Stuart and Hanoverian England. No prerequisite.

323-3 History of England: Since 1815. Victorian and contemporary Britain. No prerequisite.

324-3 History of France: To 1500. Political, social, economic, intellectual, and religious history of France, 800 to 1500. No prerequisite.

325-3 History of France: Since 1500. Political, social, economic, intellectual, and religious history of France since 1500. No prerequisite.

331-3 History of Canada: To 1867. French and British Colonial Canada. Offered alternate years. No prerequisites.

332-3 History of Canada: Since 1867. The Dominion emerges into a nation; French and English "nations;" the two World Wars and after. Offered alternate years. No prerequisite.

360-3 Military History to 1789. A study of the impact of military organization upon Western history. Surveys the evolution of warfare from ancient times to 1789. Offered alternate years. No prerequisite.

361-3 Military History from 1789. A study of the technology, organization, and theory of warfare from 1789 to the present. Examines particularly the influence which war and the military have had upon the modern world. Offered alternate years. No prerequisite.

390-3 Medieval Western Europe, 395-800. A survey of developments in Western Europe from about 395, when the Roman Empire was permanently split into Eastern and Western halves, to about 800, when Charlemagne was crowned emperor. No prerequisite. Offered alternate years.

391-3 **Medieval Western Europe, 800-1100.** Economic, political, military, social, intellectual, and religious development in Western Europe from the decline of the Carolingian Empire to the beginning of the Renaissance of the Twelfth Century. No prerequisite. Offered alternate years.

392-3 **Medieval Western Europe, 1100-1450.** Western Europe during the High and Late Middle Ages. The Renaissance of the twelfth century, and the waning of Medieval culture and institutions will be discussed. No prerequisite. Offered alternate years.

393-3 **The Ancient Near East.** A survey of the politics and culture of Mesopotamia, Egypt, Palestine, Syria, Asia Minor, and the Iranian Plateau from c. 5000 B.C. to c. 500 B.C. Offered alternate years. No prerequisite.

394-3 **Archaic and Hellenic Greece to 404 B.C.** Minoan and Mycenaean cultures, the Dorian invasions, the world of Homer, rise of Hellenic civilization, the Age of Colonization. Athens and Sparta. The wars with Persia, and the aftermath. The Athenian Empire and its downfall in the Peloponnesian War. Brief survey of Hellenic culture, concentrating on Athens in the fifth century B.C. Offered alternate years. No prerequisite.

395-3 **Late Hellenic Greece and the Hellenistic Monarchies.** The decline of Greece after the Peloponnesian War, the Macedonian conquest, Alexander the Great and his conquest of the Persian Empire. The Hellenistic world from Alexander's death to the appearance of Rome in the eastern Mediterranean. Offered alternate years. No prerequisite.

396-3 **The Early Roman Republic.** The pre-Roman cultures of Italy. Foundation of Rome. The Roman Monarchy, its overthrow, the establishment of the Republic, and its rise to a dominant position in the Mediterranean world by 133 B.C. Offered alternate years. No prerequisite.

397-3 **The Roman Revolution and the Early Empire.** The decline and fall of the Roman Republic, 133-30 B.C., the establishment of the Roman Empire, and its history to the end of the reign of Nero in A.D. 68. Offered alternate years. No prerequisite.

398-3 **The High and Late Roman Empire.** The history of the Roman Empire from the "Year of the Four Emperors" (A.D. 68/69) to A.D. 395, when the empire was permanently split into Eastern and Western halves. Offered alternate years. No prerequisite.

400-level courses carry a prerequisite of nine quarter hours of lower division history courses, or consent of instructor. Courses in American history require 111, 112, 113; those in European history require 121, 122, 123.

402-3 **Intra-Latin American Relations, 1810 to the Present.** Examination of the various policies of the Latin American nations towards their neighbors, the areas of tensions which have developed, and the attempts at solution from the period of the wars for independence to the present.

403-3 **U.S.-Latin American Relations.** Evolution of U.S. policy toward Latin America, including history of the Monroe Doctrine, Pan Americanism, intervention, the Good Neighbor, and the Alliance for Progress.

404-3 **Race and Class in Latin America, 1490 to the Present.** The Indian, European, African, and Asian racial contributions to Latin America; Colonial Indian policies; slavery and abolition; and evolution of social classes.

415-3 **The Old South.** A functional and synoptic treatment of the region's historical problems from the colonial period to 1861. Offered alternate years.

416-3 **The New South: 1865-1930.** An examination of the political, social, and economic development of Southern United States from

the Civil War to 1930. An evaluation of the south's efforts to handle the "so-called" race problem and the progress of the region's contributions to American life. Offered alternate years.

417-3 The New South: 1930 to the Present. A continuation of 416. An examination of the political, social, and economic development of the South since 1930 with particular attention to its relations with our national history. Offered alternate years.

421-3 Tudor England. Consolidation of the monarchy; the break with Rome; the Elizabethan Compromise. Prerequisite: HST 322 or consent of the instructor.

422-3 Stuart England. The monarchy and the struggle for the liberties of the subject; the Rebellion and the Interrugnum; the Restoration and the Glorious Revolution. Prerequisite: HST 322 or consent of the instructor.

423-3 Hanoverian England. The examination of the political, social, intellectual, and economic aspects of life in eighteenth century England, emphasizing the special problems which the nation faced as it passed through what might be termed an "age of transition." Prerequisite: HST 322 or consent of instructor.

425-3 Twentieth Century Britain: To 1918. The passing of Victorian Britain, Edwardian Britain, and the Great War. Prerequisite: HST 323 or consent of instructor. Offered alternate years.

426-3 Twentieth Century Britain; Since 1918. Britain between the wars; the Second World War; peace again, contemporary Britain. Prerequisite: HST 323 or consent of instructor. Offered alternate years.

427-4 History of Russia: To 1801. Development of Russia from earliest times to the beginning of the nineteenth century; medieval disunity and the Mongol conquest; independence and unification; westernization; Peter the Great and Catherine the Great.

428-4 Imperial Russia: From 1801 to 1917. Political, social, and intellectual factors of nineteenth century Russia; revolutionary thought and action; philosophy and principles of reaction; background of World War I.

429-4 History of Soviet Russia. Russia in the twentieth century; the revolutionary era from the March Revolution to the death of Lenin; the establishment of the Communist order; the Stalin Regime; World II and Communist victories against the West; Krushchev and afterward.

430-4 Intellectual History of Russia. A survey of cultural and intellectual developments in Russia beginning with the origins and development of the intelligentsia as a social group in the late eighteenth century.

431-3 Seventeenth Century Colonial America. Political, economic, social, and religious developments in the American colonies during the seventeenth century; emphasis also on the European, especially the English, background.

432-3 Eighteenth Century Colonial America. Political, economic, social, and religious developments in the American colonies from 1696 to 1763.

433-3 Revolution, Confederation, and the Constitution. Causes of the War for Independence; the Declaration of Independence; Articles of Confederation; the Revolution and its consequencs; the Critical Period and the Constitutional struggle. 1763-1789.

434-3 The Early American Republic: From 1789 to 1815. An integrated, synoptic, and interpretive study of the United States from the formation of the new government under the Constitution through the War of 1812.

435-3 The Early American Republic: From 1815 to 1850. An integrated, synoptic, and interpretive study of the United States from

the establishment of peace after the War of 1812 through the Compromise of 1850.

437-3 Civil War and Reconstruction: From 1850 to 1865. Causes of the war; initial military campaigns and political issues. Offered alternate years.

438-3 Civil War and Reconstruction: From 1865 to 1877. Ideologies of Reconstruction; the South during Reconstruction; the North during Reconstruction. Offered alternate years.

440-3 America in Transition. To trace the development of the United States from the end of Reconstruction to the end of the nineteenth century. Offered alternate years.

441-3 Twentieth Century America: To 1920. Social, economic, political, and diplomatic development of the United States from the 1890's to 1920, with emphasis on Populism, Progressivism, the First World War.

442-3 Twentieth Century America: From 1920 to 1940. Republican ascendancy, the Great Crash, the Depression, and the New Deal.

443-3 Twentieth Century America: Since 1940. The Second World War, the postwar era, and recent American problems. Offered alternate years.

444-3 American Thought and Society: To the Revolution. Selected topics in the social and intellectual history of colonial America with special emphasis on religion, education, literature, science, immigration, and aspects of formal culture. Offered alternate years.

445-3 American Thought and Society: From the Revolution Through Reconstruction. American thought and society, with emphasis on the development of a national culture, immigration, the westward movement, social experiments of the Jacksonian era, anti-slavery, Civil War, and the struggle over racial equality. Offered alternate years.

446-3 American Thought and Society: From the Gilded Age to the Present. Patterns of nationalization, industrialization, urbanization, immigration, pragmatism, and reform. Offered alternate years.

447-3 Economic and Technological Development of the United States: To 1840. Economic progress and technological change in an agrarian and commercial economy; the impact of growth and change on American social, political, and cultural life. Offered alternate years.

448-3 Economic and Technological Development of the United States: Since 1840. Mechanization and mass-production and the rise of an industrial economy; the impact of economic growth and technological change on American social, political, cultural, and religious life. Offered alternate years.

449-3 American Constitutional History: To 1850. An introduction to Anglo-American legal thought and institutions emphasizing the creation of the Constitution of the United States and the Supreme Court under Marshall and Taney.

450-3 American Constitutional History: 1850 to 1929. An examination of the impact of the judiciary, particularly the United States Supreme Court, on American social, economic, and political policies and institutions from the 1850's to 1929.

451-3 American Constitutional History: Since 1929. An examination of the personnel and decisions of the United States Supreme Court since the Great Depression of 1929.

453-3 The Age of Renaissance. The examination of the decline of feudalism and manorialism and the rise of the nation state from 1350 to 1500, with special emphasis upon the revival of culture and the arts and the decline of the universal church. (See also REL 453-3).

454-3 The Age of Reformation. The examination of the social, economic, and political roots of the Reformation, the Reform movement

itself, and the impact which it had upon European life, thought, and politics. (See also REL 454-3).

455-3 The French Revolution and Napoleon. Causes and course of the French Revolution, and the rise and fall of Napoleon. Offered alternate years.

457-3 Europe From 1815 to 1870. Reaction, revolutions, and reforms from Metternich to Bismarck; industrial and scientific progress; emergence of nationalism, liberalism, and socialism.

458-3 Europe from 1870 to 1900. Political, economic, and cultural effects of nationalism, imperialism, and industrialization in Europe; national developments and international alliances.

461-3 The World in the Twentieth Century: To 1929. Recent world history, with emphasis on Europe; the Edwardian age; the causes and course of World War I; the Paris Peace Settlement; the League of Nations and the search for security; rise of Communism and Fascism.

462-3 The World in the Twentieth Century: From 1929 to 1945. The world impact of the Great Depression; the rise of dictators and the march of aggression; causes and course of World War II.

463-3 The World in the Twentieth Century: Since 1945. Contemporary world history; the World War II peace settlement; the eclipse and revival of western Europe; Soviet Russia and its satellites; the Cold War; war in Korea and Viet Nam; the end of Colonialism; the current world scene.

467-3 Medieval Eastern Europe and the Near East, 395-800. The Later Roman Empire of the East, and its transformation into the Byzantine state. The Neo-Persian, or Sassanian, and Ethiopian Empires. Islam, and the rise and zenith of the Arab Empire. First appearance of the Slavs. Foundation of the Bulgar state. Offered alternate years.

468-3 Medieval Eastern Europe and the Near East, 800-1071. The golden age of the Byzantine Empire, and its counter-attack against Islam. Decline of the Arab Empire, and the rejuvenation of Islam by the Seljuq Turks. The Slavs: Bulgaria, and Kievan Russia. Offered alternate years.

469-3 Medieval Eastern Europe and the Near East, 1071-1453. Decline and fall of Byzantium. The Crusades and the Latin States of the East. Origins and rise of the Ottoman Empire. The Slavs: Bulgaria, Serbia, and Muscovite Russia. The Mongol invasions. Offered alternate years.

471-3 History of Religion in America. Survey of the development of religious thought and institutional life in the United States as viewed in the context of growth of American culture. Offered alternate years.

474-3 American Urban History: Colonial Times to 1860. A history of the growth and development of urban centers from colonial times to the eve of the Civil War, and a study of the impact of urban life on American institutions and attitudes.

475-3 American Urban History: Since 1860. A study of the expansion of urban centers in industrial and urban America, with special emphasis on the role of immigration, the impact of industrialization, municipal corruption, reform impulses, and the growth of metropolitanism.

476-3 American Urban Problems in the Twentieth Century. An intensive study of the major urban problems of the late nineteenth and early twentieth centuries. Prerequisite: consent of instructor.

477-3 Russian-American Relations: To 1945. To contrast Russian-American relations of the nineteenth century with the situation in the twentieth century. Emphasis on 1861 to 1917, compared wih 1917 to 1945.

478-3 Russian-American Relations: The Cold War. The era of the "super-powers." The conflict between the United States and Russia from the end of World War II to the present.

481-3 Intellectual and Cultural History of Europe: To 1300. A study of the history of ideas and cultural trends in the Greece and Rome of antiquity and Europe in the Middle Ages; emphasis on the place of ideas in the political, economic, and social setting of each age, and their influence on later ages. Offered alternate years.

482-3 Intellectual and Cultural History of Europe: From 1300 to 1715. Ideas and cultural trends during the Renaissance, Reformation, and early modern eras: cultural re-awakening; religious upheaval; Rationalism and the rise of science. Offered alternate years.

483-3 Intellectual and Cultural History of Europe: Since 1715. Ideas and cultural trends during the last three centuries; the Enlightenment; nineteenth century Romanticism, Nationalism, Liberalism, Conservatism, Marxian Radicalism, and Darwinism; twentieth century science, philosophy, and political ideologies. Offered alternate years.

484-3 American Diplomacy: From the Revolution to 1860. Early problems with Great Britain, France, and Spain; special emphasis on the Monroe Doctrine and Manifest Destiny; rounding out the national boundaries.

485-3 American Diplomacy: From the Civil War to 1900. Emergence of the United States as a world power; expansion after 1865, with special emphasis on the 1890's.

486-3 American Diplomacy: From 1900 to 1945. The diplomacy of Theodore Roosevelt's administration; special emphasis on the period from 1915 to 1945.

490-1 to 6 Problems in History. For individual or group study in any area of history involving research into a problem or problems agreed upon by the student and instructor directing the study. Open by consent of instructor.

491-1 to 6 Independent Readings. A course to provide opportunity for further detailed study in one of the various fields of history. No class meetings, but reports in conferences with instructor. Open by consent of instructor.

492-3 Nineteenth Century Africa. An examination of the programs and policies which treat with the economic, religious, and social development of Africa from 1800 to 1900. Emphasis will be placed on the interaction between Africa and Europe as a result of invasion, intervention, and imperialism. Offered alternate years.

493-3 Twentieth Century Africa. An examination and evaluation of the international relations as well as the developing economic, political, social, and religious forces and trends within the various African nations in the period 1900 to the present. Offered alternate years.

497-3 A Century of Revolution: 1689 to 1789. A comparative view of the English Revolution of 1688, the American Revolution of 1776, and the French Revolution of 1789.

498-3 Historiography. A course to acquaint students in history with the most important theories of historical interpretation and to introduce them to the work of representative historians of the past and present. Required of majors. Prerequisite: 27 quarter hours of history, 18 of which must be advanced, and senior standing.

499-3 Historical Methods. Introduction to the methods and materials of historical research and writing; directed research in special topics designed to acquaint students in history with library use, note-taking, preparation of bibliography, the nature, use, and criticism of documents, and preparation of manuscripts. Required of majors. Prerequisite: 27 quarter hours of history, 18 of which must be upper division, and senior standing.

Graduate Courses

602-3 Intra-Latin American Relations: 1810 to the Present.
603-3 U.S.-Latin American Relations.
604-3 Race and Class in Latin America: 1490 to the Present.
615-3 The Old South.
616-3 The New South: 1865 to 1930.
617-3 The New South: 1930 to the Present.
621-3 Tudor England.
622-3 Stuart England.
623-3 Hanoverian England.
625-3 Twentieth Century Britain: To 1918.
626-3 Twentieth Century Britain: Since 1918.
627-4 History of Russia: To 1801.
628-4 Imperial Russia: From 1801 to 1917.
629-4 History of Soviet Russia.
630-4 Intellectual History of Russia.
631-3 Seventeenth Century Colonial America.
632-3 Eighteenth Century Colonial America.
633-3 Revolution, Confederation, and the Constitution.
634-3 The Early American Republic: From 1789 to 1815.
635-3 The Early American Republic: From 1815 to 1850.
637-3 Civil War and Reconstruction: From 1850 to 1865.
638-3 Civil War and Reconstruction: From 1865 to 1877.
640-3 America in Transition.
641-3 Twentieth Century America: To 1920.
642-3 Twentieth Century America: From 1920 to 1940.
643-3 Twentieth Century America: Since 1940.
644-3 American Thought and Society: To the Revolution.
645-3 American Thought and Society: From the Revolution Through Reconstruction.
646-3 American Thought and Society: From the Gilded Age to the Present.
647-3 Economic and Technological Development of the United States: To 1840.
648-3 Economic and Technological Development of the United States: Since 1840.
649-3 American Constitutional History: To 1850.
650-3 American Constitutional History: 1850-1929.
651-3 American Constitutional History: Since 1929.
653-3 The Age of the Renaissance.
654-3 The Age of the Reformation.
655-3 The French Revolution and Napoleon.
657-3 Europe from 1815 to 1870.
658-3 Europe from 1870 to 1900.
661-3 The World in the Twentieth Century: To 1929.
662-3 The World in the Twentieth Century: From 1929 to 1945.
663-3 The World in the Twentieth Century: Since 1945.
667-3 Medieval Eastern Europe and the Near East, 395-800.
668-3 Medieval Eastern Europe and the Near East, 800-1071.
669-3 Medieval Eastern Europe and the Near East, 1071-1453.
671-3 History of Religion in America.
674-3 American Urban History: Colonial Times to 1860.
675-3 American Urban History: Since 1860.

676-3 American Urban Problems in the Twentieth Century.
677-3 Russian-American Relations: To 1945.
678-3 Russian-American Relations: The Cold War.
681-3 Intellectual and Cultural History of Europe: To 1300.
682-3 Intellectual and Cultural History of Europe: From 1300 to 1715.
683-3 Intellectual and Cultural History of Europe: Since 1715.
684-3 American Dipomacy: From the Revolution to 1860.
685-3 American Diplomacy: From the Civil War to 1900.
686-3 American Diplomacy: From 1900 to 1945.
690-1 to 6 Problems in History.
692-3 Nineteenth Century Africa.
693-3 Twentieth Century Africa.
697-3 A Century of Revolution: 1689 to 1789.
701-3 Reading Seminar in American History.
702-3 Research Seminar in American History.
703-3 Reading Seminar in European History.
704-3 Research Seminar in European History.
705-3 Reading Seminar in Latin American History.
706-3 Research Seminar in Latin American History.
707-3 Reading Seminar in Diplomatic History.
708-3 Research Seminar in Diplomatic History.
709-3 Reading Seminar in Russian History.
710-3 Research Seminar in Russian History.
799-1 to 9 Thesis.

Latin

See Classics

Liberal Arts (LA)

211-3 **Introduction to Urban Studies.** An interdisciplinary introduction at the freshman or sophomore level to the general field of urban studies. The purpose of this course is to present the student with a general view of the scope and meaning of urban life and problems.

411-3 **Seminar in Urban Studies.** This course is designed for graduating seniors who have a special interest in urban studies. The course includes the compilation of an interdisciplinary bibliography in urban studies and a major field research paper. Prerequisite: LA 211 and permission of instructor.

401-3, 402-3, 403-3 **National and World Issues.** The objective of the course is to bring the liberal arts senior into contact with a number of vital world issues during his final year in the university. The course provides the senior, at a point when his university career is reaching its climax, opportunities to study and discuss major contemporary problems with experts in the several fields and with his fellow seniors from other disciplines.

Library and Communication Science (LCS)

110-1 **Bibliographic Techniques in Research.** The student will learn

to use reference and bibliographical sources, materials, and systems for instant or in-depth retrieval. Systematized instruction will be used for individuals who wish to work independently. A step-by-step procedure will be implemented for their use. Media-lecture classes will be held weekly for those who wish personal assistance and guidance in their research.

141-3 Film in Communication. A survey of the contemporary uses of the film medium and the fundamental tools of intelligent film screening.

311-4 (formerly 421-4) Reference Materials and Bibliography. Important reference works, indexes, and bibliographies with practical problems in their use.

312-4 (formerly 322-4) Organization and Administration of School Media Centers. Administration of materials, staff, plans, and equipment; standards and certification; the place of the media center in the school.

313-4 (formerly 321-4) Cataloging and Classification. Instruction and practice in the preparation of library materials.

412-4 Selection of Materials for the Elementary School. Selection of materials suitable for the media-learning center of the elementary school with special emphasis on nonprint materials.

413-4 Selection of Materials for the Secondary School. Selection of materials suitable for the media-learning center of the secondary school with special emphasis on nonprint materials.

414-3 Storytelling. Fundamental principles of the art of storytelling including techniques of adaptation and presentation. Broad foundation in the materials of literature, styles of presentation, story cycles, methods of learning, and practice in storytelling. Planning the story hour for the school and public library, recreational center, and for radio and television.

435-4 (formerly 448-4) Production of Instructional Materials. A nontechnical course with emphasis on production of locally made materials for classroom use including mounting, lettering, scriptwriting, photography, tape recording, and transparency production.

442-4 Art of the Film I: Origins to 1928. The historical development of the art of the film from the scientific experiments of the 19th century through the end of the silent era. Examination of the technical, social, economic, and cultural factors which have shaped film art. Prerequisite: junior standing or consent of department.

443-4 Art of the Film II: 1929 to the Present. The historical development of the art of the film from the beginning of the sound era to the present. Consideration given to both the American and European film and reaction of the film to socio-cultural conditions. Prerequisite: junior standing or consent of the department.

444-1 to 4 Studies in Film History and Criticism. Courses offered under this title provide intensive study of a selected area of film history and/or criticism. Exact title announced each time the course is offered. Prerequisite: junior standing or consent of department.

445-3 Film Production I. A survey of the elementary problems of film production: introduction to film techniques; participation on small film projects from initial conception to premier presentation.

446-4 Film Production II. Advanced problems of film production: advanced 8mm and 16mm production techniques, independent production of individual film projects. Prerequisite: LS 445 and/or permission of the department.

447-1 to 4 Studies in Film Production. Courses offered under this title provide an intensive study of a selected area of film production. Exact title announced each time the course is offered. Prerequisite: junior standing or consent of department.

449-3 to 4 Audio-Visual Materials and Methods. (See ED 449.)

455-4 Television Production. A survey of the elementary problems of television production. Introduction to television techniques, participation on television productions in a wide variety of capacities. Programming utilization within the educational setting will be emphasized. Prerequisite: junior standing or consent of department.

457-1 to 4 Studies in Broadcasting. An intensive study of a selected area of broadcasting designed to meet the needs of educational broadcasting personnel, audio-visual specialists, and others interested in the media and communication fields. Exact title announced each time the course is offered. Prerequisite: junior standing or consent of department.

470-1 to 6 Workshop in Library and Communication Science. An intensive study of a selected area of library and communication science designed to meet the needs of librarians, audio-visual personnel, and others interested in the media and communication fields. Prerequisite: junior standing or consent of department.

481-4 to 12 (formerly 431-4 to 12) Library Practice in the Elementary School. Supervised practice in a public school library. Formal applications must be made through the Office of the Director of Laboratory Experiences in Education during the first two weeks of the quarter prior to library practice. May be taken concurrently with practice teaching. Prerequisites: LCS 311, 312, 313, 449, and either LCS 412 or ED 421.

482-4 to 12 (formerly 431-4 to 12) Library Practice in the Secondary School. Supervised practice in a public school library. Formal applications must be made through the Office of the Director of Laboratory Experiences in Education during the first two weeks of the quarter prior to library practice. May be taken concurrently with practice teaching. Prerequisites: LCS 311, 312, 313, 449 and either ED 420 or LCS 413.

490-1 to 4 Independent Study. Advanced individual study in an area not available through regular course structure. Prerequisite: Permission of the department.

Graduate Courses

635-4 Production of Instructional Materials.

649-3 to 4 Audio-Visual Materials and Methods.

655-4 Television Production.

670-1 to 6 Workshop in Library and Communication Science.

711-4 Development of Collections.

713-4 Organization of Library Collections.

715-4 Utilization of Collections and Information Sources.

717-4 Information Sources in the Humanities and Social Sciences.

723-4 Principles of Information Organization.

790-1 to 4 Independent Study.

Linguistics

See Modern Languages.

Management (MGT)

103-3 History of Management Thought. Presents a framework show-

ing the evolution of management thought from the beginning of time to today. Various schools of management thought are discussed showing their origin and development.

301-3 Principles of Management. General nature and functions of organization and management in society, embodying underlying trends.

302-3 Introduction to Organizational Behavior. A course devoted to the development of an understanding of behavior within a modern organization. The interrelationships of the individuals, informal and formal groups are studied. Prerequisite: MGT 301.

303-3 Production Management. Management Principles applied to such areas as industrial buildings, layouts, equipment, production control, purchasing, inventories, budgets, and forecasts. Prerequisite: MGT 301.

411-3 Human Factors in Supervisory Management. Analysis of interpersonal relations, implementation of personnel programs and policies, communication process, and morale factors as they relate to productivity and achievement of organizational and personal objectives. Prerequisite: MGT 301.

412-3 Management-Union Relations. An analytical study of bargaining requirements and methods, agreement development and administration, and trends in collective bargaining. Prerequisite: MGT 302.

421-3 The Personnel Function. An analysis of the manpower system. A discussion of the interrelationship of policy areas such as manpower staffing, development, and utilization. Prequisite: MGT 302.

422-3 Manpower Utilization. Analysis of job evaluation, job design, compensation administration, and similar topics as related to personnel objectives. Prerequisite: MGT 302.

423-4 Contemporary Problems in Personnel Management. Research, analysis, and discussion of contemporary issues involving the management of personnel. Course approach consists of 3 seminar hours and 1 hour of supervised field and/or library research. Prerequisite: MGT 421 and 422.

431-3 Intermediate Production Management. Designed to provide a systems approach for understanding the production function in business. Emphasis on the analysis of major production problems and solutions relative to cost and effectiveness. Prerequisite: MGT 303 and BUS 303.

432-3 Production Control. Principles and techniques of management; current practices in production planning, routing, scheduling, etc. Prerequisite: MGT 431.

433-3 Industrial and Institutional Purchasing. Lectures and case studies relating to materials management. Emphasis on purchasing, receiving, storing, and inventory control; value analysis and specialized problems in institutional procurement. Prerequisite: MGT 301.

477-1 to 3 Special Studies in Management. Reading or research in a selected field of management. Prerequisites: Senior standing in management and department chairman's approval. Repeatable up to ten hours.

Graduate Courses

621-3 Graduate Survey in Management.

701-3 Seminar in Organizational Behavior.

702-3 Seminar in Production Management.

703-3 Seminar in Personnel Administration.

704-3 Seminar in Management Philosophy and Applications.

705-3 Seminar in Industrial Relations.

711-3 Seminar in R&D Management.

714-3 Technological Forecasting.
741-3 Contemporary Management.
751-3 Production Methods and Controls.
753-3 Problems in Management.
754-3 Dynamics of Organizational Design.
761-3 Management Planning and Control.
763-3 Systems Management.
770-4 Contemporary Management.
771-4 Organizational Theory and Behavior.
772-4 Seminar in Systems Management.
781-1 to 3 Special Studies in Management.
799-6 to 9 Thesis.

Marketing (MKT)

103-3 **Historical Development of Marketing Institutions.** A series of case studies tracing the adaption and change in particular types of marketing institutions such as supermarkets, chain stores and department stores. Case histories of particular institutions such as Macy's and Sears, Roebuck and Company will also be discussed. In addition, the factors that shaped present day marketing institutions and the changes in society resulting from changes in marketing institutions are examined to assess the adaptive and formation characteristics of marketing institutions.

301-3 **Marketing in the Economy.** An examination of the structure and functioning of the American marketing system with emphasis on its economic and social determinants, cost, productivity, and efficiency. Prerequisite: EC 201, 202, 203.

302-3 **Marketing Management.** Factors involved in the management of the marketing function relative to product development, promotion, pricing, physical distribution, and the determination of marketing objectives within the framework of the marketing system and available markets. Prerequisite: MKT 301.

303-3 **Consumer Behavior.** Development of knowledge of the behavioral content of marketing in consumer, industrial, and international fields. Examination of applicable theory, research findings, and concepts that are provided by psychology, sociology, anthropology, and marketing. Course stresses conceptual models of buyer behavior based upon sources of influence: individual, group, culture, environment. Prerequisite: MKT 302.

336-3 **Fundamentals of Personal Selling.** The nature of personal selling in the marketing environment is examined with special emphasis on the personal selling-marketing relationships, buyer motivation and behavior, selling strategy, and the techniques of selling. Prerequisite: MKT 301.

401-3 **Sales Management.** Objectives, policies and techniques of sales force management. Consideration is given to the special role of the sales manager in the marketing, selling, personnel, and financial responsibilities and opportunities. Prerequisite: MKT 301.

411-3 **Credit Management.** A course concerning the usage of credit as a tool of marketing management. Topics include the basic concept of credit, the social influences of credit, production of the credit service, agencies, and institutions involved in performance of credit functions, and the technology of credit management. Prerequisite: MKT 301.

421-3 International Marketing. An analysis of the managerial and operational problems of the multinational business organization. Emphasis is placed on the role of environmental differences in influencing marketing strategy. Prerequisite: MKT 302.

431-3 Logistics in the Firm. An overview of logistics as a part of the firm's marketing program. Physical facilities transportation, and alternative channels of distribution are among the topics closely scrutinized. Prerequisite: MKT 302.

441-3 Advertising. Advertising as a communication tool in marketing management. Emphasis is placed on decision-making relative to copy, media selection, budgets, and on the appraisal of advertising effectiveness. Prerequisite: MKT 301.

451-3 Marketing Research. Examination of the marketing research process in both a basic and an applied sense with special attention given to the concepts and techniques currently employed in behavioral research. Prerequisite: MKT 303.

452-3 Analysis of Markets. Continuation of MKT 451 with emphasis on the use of marketing analysis in the decision-making process. The use of the scientific approach in relation to product, channel, price and promotional and other marketing decisions is studied. Prerequisite: MKT 451.

461-3 Principles of Retailing. Analysis of the performance of marketing functions at the retail level. Emphasis is placed on institutional compositions, competitive factors, and the management of the marketing mix as it relates to retail market segments. Prerequisite: MKT 301.

465-2 to 3, 466-2 to 3 Problems in Retail Management. Course dealing with a wide variety of problems in retailing. Probable future developments in retailing and the analysis and decision-making needed to cope with anticipated changes. For three hours credit a written report, usually based on a study of a specific problem in a retail store, is required. Prerequisite: MKT 461.

471-3 Industrial Marketing. Nature, evolution, and functions of industrial marketing and wholesaling operations; market structure, pricing, promotion, governmental, economic, and ethical aspects. Prerequisite: MKT 302.

477-1 to 3 Special Studies in Marketing. Reading or research in a selected field of marketing. Prerequisites: MKT 303 and senior standing.

492-3 Marketing Policy. A capstone course designed to integrate the student's work in marketing and to promote marketing problem-solving capabilities. Cases are used extensively. Prerequisites: Senior standing in the Division of Business Administration and completion of majority of degree course work.

Graduate Courses

621-3 Graduate Survey in Marketing.

701-3 Seminar in Marketing I.

702-3 Seminar in Marketing II.

703-3 Seminar in Marketing III.

704-3 Demand Stimulation I.

705-3 Demand Stimulation II.

707-3 Marketing Research and Analysis I.

708-3 Marketing Research and Analysis II.

710-3 Buyer Behavior.

711-3 Strategic Implications of Buyer Behavior.

713-3 Logistics Systems.

714-3 Management of Logistics Systems.

716-3 International Marketing I.
717-3 International Marketing II.
741-3 Marketing Decisions in Business Administration.
770-4 Marketing Policy and Management.
771-4 Seminar in Marketing.
781-1 to 3 Special Studies in Marketing Management.
799-6 to 9 Thesis.

Mathematics (MTH)

The middle digit of the course number indicates the area of mathematics as follows: 1-Computer science, 2-Business mathematics, 3-Analysis, 4-Mathematics education, 5-Algebra, 6-Statistics and probability, 7-Geometry.

102-3 Elementary Algebra. Programmed Beginning Algebra. Sets, counting numbers, integers, rational numbers, equations in two variables, polynomials, factoring, fractions, fractional and quadratic equations. Anyone taking this course will have three hours added to his graduation requirements. Grading will be on a pass-fail basis.

127-3 Intermediate Algebra. Algebraic expressions, radicals, exponents, absolute values, inequalities, logarithmic and exponential functions, graphs, functions. Prerequisite: Math 102 or one year of high school algebra or a sufficiently high score on the mathematics placement examination.

130-3 College Algebra. Complex numbers, polynomials, systems of equations and inequalities, sequences, matrices and determinants, permutations and combinations, mathematical induction and the binomial theorem. Prerequisite: Math 127 or 128, or two years of high school algebra, or a sufficiently high score on the mathematics placement examination.

131-3 Trigonometry. Trigonometric and inverse trigonometric functions. Complex numbers. Prerequisite: a sufficiently high score on a placement exam or MTH 130. MTH 130 and 131 may be taken concurrently.

132-5 Calculus I. Introduction to analytic geometry, functions, limits, the derivative and applications, the definite integral and applications. Prerequisite: A sufficiently high score on the placement examination or MTH 131.

133-5 Calculus II. A continuation of MTH 132. Prerequisite: MTH 132.

135-3 Calculus Ia. Prerequisite: Same as MTH 132.

136-3 Calculus Ib. Prerequisite: MTH 135.

137-3 Calculus IIa. Prerequisite: MTH 136.

Note: MTH 135, 136, 137 are given in the evening and are equivalent to MTH 132, 133.

141-4, 142-4 Mathematical Foundations. Sets, relations, functions of the whole number system, place value notation, modular numbers, permutations and combinations, development of the integers and rational numbers, fractional and basimal notations, polynomial and rational functions. 3 lect., 1 lab. Must be taken in sequence.

158-3 Elementary Linear Mathematics. Equations and inequalities in one and several variables, introduction to analytic geometry, the algebra of vectors and matrices, linear independence of n-tuples, solutions of linear system in n variables. Prerequisites: MTH 130 or three or more years of college preparatory math in high school or a sufficiently high score on the math placement examination.

164-3 Elementary Probability. Numerical descriptive methods; the axioms of probability; events; random variables; expected values; introduction to the binomial and normal distributions. Prerequisites: adequate high school preparation (MTH 130 or equivalent on placement examination.)

200-3 Accelerated Calculus I. This is a course designed for those who want to review calculus. This along with MTH 300 would cover the material of MTH 132, 133, 231, 232. Prerequisite: a previous (perhaps much forgotten) knowledge of calculus or consent of instructor. This course is usually given in the evening.

224-3 Calculus A. Functions, rates of change, limits, derivatives of algebraic functions, and applications including maxima and minima. MTH 224 and 225 are oriented toward students in business and the social sciences. Prerequisite: MTH 130 or a sufficiently high score on the placement examination and sophomore standing. Credit cannot be received for both MTH 224 and 132 or 135.

225-3 Calculus B. Indefinite and definite integrals, applications, and exponential and logarithmic functions. Prerequisite: MTH 224.

231-5 Calculus III. Continuation of MTH 133. Prerequisite: MTH 133.

232-5 Calculus IV. Continuation of MTH 231 and includes multiple integrals and infinite series. Prerequisite: MTH 231.

233-5 Differential Equations. Elementary first order equations, linear equations, linear systems, series solutions, Laplace transform, applications. Uniqueness and existence theorems for solutions, asymptotic stability, phase plane. Prerequisite: MTH 232.

235-3 Calculus IIIa. Prerequisite: MTH 137.

236-3 Calculus IIIb. Prerequisite: MTH 235.

237-3 Calculus IVa. Prerequisite: MTH 236.

238-3 Calculus IVb. This course includes some differential equations. Prerequisite: MTH 237.

239-3 Differential Equations. Along with some of MTH 238, this course is the same as MTH 233. Prerequisite: MTH 238.

Note: MTH 235-239 are given in the evening and cover the same material as MTH 231-233.

265-3 Elementary Statistics. Statistical Inference: point and interval estimation of the mean, the binomial parameter, hypothesis testting, the t distribution, population variance. Linear regression and correlation, least squares, chi-square and contingency tables. The analysis of variance. Examples will be taken from social, industrial, clinical, educational, and other applications. Prerequisite: MTH 164. Not open to students with previous credit in a similar statistics course.

280-3 Introduction to Mathematical Proof. Topics selected by the instructor will be used to give students experience in constructing mathematical proofs. Prerequisite: The course is intended for sophomores or juniors who have just completed the calculus sequence.

300-3 Accelerated Calculus II. A continuation of MTH 200. Prerequisite: MTH 200.

310-3 Discrete Structures I: Foundations. Topics from set theory. Boolean algebra, logic, algorithm theory and formal languages. Prerequisite: Junior standing.

316-3, 317-3 Numerical Methods for Digital Computers I and II. (See CS 316-3, 317-3.)

331-3 Vector Analysis. Algebra of vectors, vector valued function, gradient, curl, divergence, line and surface integrals, integral theorems, curvilinear coordinates, applications. Prerequisite: MTH 232 or 238.

332-3 Complex Variables. Topics discussed include power series expansion, the formula of Cauchy, residues, conformal mappings, and elementary functions in the complex domain. This is an applied course intended for students of science and engineering. Prerequisite: MTH 232 or 238.

333-3 Partial Differential Equations and Boundary Value Problems. Partial differential equations, boundary value problems, eigenfunctions, Fourier series, applications. Prerequisite: MTH 233 or 239.

337-3 Introduction to Complex Analysis I. Theory of analytic functions, power series, conformal mapping, residues, harmonic functions, Schwarz-Christofell transformation, Poisson integral formula, Dirichlet and Neumann problems. Prerequisite: MTH 232 or 238.

338-3 Introduction to Complex Analysis II. A continuation of MTH 337. Prerequisite: MTH 337.

345-4 (formerly 145-4) Elementary Geometry. Content: axioms, finite geometries, nonmetric and metric length, angle, area, volume, polygonial figures, elementary curves. Prerequisite: MTH 142. 3 hrs. lect., 1 hr. lab.

355-3 Matrix Algebra I. Algebra of matrices, determinants, inverses, rank, linear independence; characteristic equations, roots and vectors. Prerequisite: MTH 232 or 238.

356-3 Matrix Algebra II. Vector spaces, linear transformations, unitary and orthogonal transformations, inner products, triangularizations, diagonalizations, quadratic forms. Prerequisite: MTH 355.

360-5 Applied Statistics. An introduction to applied statistics. Data handling using desk calculators and prewritten computer programs, and standard parametric statistical methods will be among the topics considered. Prerequisite: Nine or ten hours of Calculus or permission of the instructor. Not open to students with previous credit in a similar statistics course.

381-3 Elementary Number Theory. Divisibility properties of integers, prime numbers, congruences, the Chinese remainder theorem, quadratic reciprocity law, Mobius inversion formula, Euler ϕ-function, other number-theoretic functions. Prerequisite: MTH 232 or junior standing.

401-4, 402-4, 403-4 Mathematical Foundations I, II, III. This course covers material of MTH 141-142-143 and is open only to In-Service Institute registrants.

411-4, 412-4, 413-4 Advanced Computer Programming I-III. (See CS 351-4, 352-4, 353-4.)

414-4, 415-4, 416-4 Advanced Computer Programming IV-VI. (See CS 451-4, 452-4, 453-4.)

431-3 Real Variables I. Functions, sequences, limits, continuity, differentiability, integration, and mean-value theorems. Prerequisite: completion of the calculus sequence. Senior standing recommended.

432-3 Real Variables II. Infinite series, uniforms, convergence, Taylor series, improper integrals, special functions, and Fourier series. Prerequisite: MTH 431.

433-3 Real Variables III. Theory of functions of several variables, vector-valued functions. Prerequisite: MTH 432.

437-3, 438-3, 439-3 Special Functions I, II, III. I: Gamma and Beta functions, hypergeometric and generalized hypergeometric functions. **II:** Bessel, confluent hypergeometric, Legendre, Hermite, and Laguerre functions. **III:** Jacobi polynomials, elliptic, Theta and Jacobi's elliptic functions. Prerequisites: MTH 338 and 433 or consent of the department.

440-3 History of Mathematics. Development of calculus from antiquity through Newton, Leibnitz. Development of classical analysis. The rise of abstraction; set theory, algebra, topology. Modern analysis. Prerequisites: MTH 232, 451 and 471.

441-4, 442-4 **Foundations of Analysis.** Elementary logic, sets, whole numbers, modular systems, integers, rationals, complex extensions, real numbers, elementary functions. Format: 2 hrs. lect., 3 hrs. lab.

451-3 **Introduction to Modern Algebra I.** Introduction to abstract algebraic structures, including groups, rings, integral domains, fields and vector spaces, with special attention being given to matrices and linear algebra. Prerequisite: MTH 232 or 238.

452-3 **Introduction to Modern Algebra II.** A continuation of MTH 451. Prerequisite: MTH 451.

453-3 **Introduction to Modern Algebra III.** A continuation of MTH 452. Prerequisite: MTH 452.

457-3 **Discrete Structures II: Combinatorics.** Topics from permutations, combinatorics generating functions, recurrence relations, Polya's theory of counting. Prerequisite: Junior standing.

458-3 **Discrete Structures III: Graph Theory.** Fundamental concepts, trees, circuits, cut sets, planar and dual graphs, transport networks, matching theory. Prerequisite: MTH 457.

461-3 **Statistics I.** Probability models, density and distribution functions, expectation, marginal and conditional distributions, stochastic independence, classical models, moment-generating functions, estimation, testing, central limit theorem, sufficient statistics, maximum likelihood estimation, and the multivariate normal distribution. Prerequisite: completion of the calculus sequence.

462-3 **Statistics II.** A continuation of MTH 461. Prerequisite: MTH 461.

463-3 **Statistics III.** A continuation of MTH 462. Prerequisite: MTH 462 and a course in matrix algebra or permission of the instructor.

464-3 **Introduction to Stochastic Processes I.** Stationary processes, processes with independent increments, continuous and discrete time stochastic processes, transformations on stochastic processes, harmonic analysis of stochastic processes. Special attention given to Poisson processes, Wiener processes, and Markov processes. Prerequisite: MTH 461.

465-3 **Introduction to Stochastic Processes II.** A continuation of MTH 464. Prerequisite: MTH 464.

471-3 **Geometry I.** Topics in the foundations of Euclidean geometry, introduction to non-Euclidean and other geometries. Prerequisite: MTH 232 or 238.

472-3 **Geometry II.** Continuation of MTH 471. Prerequisite: MTH 471.

475-4 **Differential Geometry.** Calculus on Euclidean space, Frame fields, calculus on a surface, shape operators, geometry of surfaces in Euclidean 3 space. Prerequisite: MTH 355 or 331 or the equivalent.

488-1 to 5 **Independent Reading.** Prerequisite: Consent of instructor.

492-1 **Seminar.** Undergraduate. Prerequisite: Consent of instructor.

Graduate Courses

501-4, 502-4, 503-4 Mathematical Foundations I, II, III.

510-3 Discrete Structures I: Foundations.

516-3, 517-3 Numerical Methods for Digital Computers I and II. (See CS 516-3, 517-3).

531-3 Vector Analysis.

532-3 Complex Variables.

533-3 Partial Differential Equations and Boundary Value Problems.

537-3 Introduction to Complex Analysis I.

538-3 Introduction to Complex Analysis II.
540-3 History of Mathematics.
541-4, 542-4 Foundations of Analysis
545-4 Elementary Geometry.
555-3 Matrix Algebra I.
556-3 Matrix Algebra II.
560-5 Applied Statistics.
581-3 Elementary Number Theory.
611-4, 612-4, 613-4 Advanced Computer Programming I-III. (See CS 551-4, 552-4, 553-4.)
614-4, 615-4, 616-4 Advanced Computer Programming IV-VI. (See CS 651-4, 652-4, 653-4).
631-3 Real Variables I.
632-3 Real Variables II.
633-3 Real Variables III.
637-3, 638-3, 639-3 Special Functions I, II, III.
651-3 Introduction to Modern Algebra I.
652-3 Introduction to Modern Algebra II.
653-3 Introduction to Modern Algebra III.
657-3 Discrete Structures II: Combinatorics.
658-3 Discrete Structures III: Graph Theory.
661-3 Statistics I.
662-3 Statistics II.
663-3 Statistics III.
664-3 Introduction to Stochastic Processes I.
665-3 Introduction to Stochastic Processes II.
671-3 Geometry I.
672-3 Geometry II.
675-4 Differential Geometry.
688-1 to 5 Independent Reading.
692-1 Seminar
716-4 Numerical Analysis I.
717-4 Numerical Analysis II.
718-4 Numerical Analysis III.
731-4 Real Analysis I.
732-4 Real Analysis II.
733-4 Real Analysis III.
736-4 Calculus of Variations.
737-4 Complex Analysis I.
738-4 Complex Analysis II.
739-4 Complex Analysis III.
751-4 Algebra I.
752-4 Algebra II.
753-4 Algebra III.
771-4 Topology I.
772-4 Topology II.
792-1 to 5 Special Problems (Graduate).
800-1 Graduate Seminar.
830-1 to 4 Topics in Analysis.
850-1 to 4 Topics in Algebra.
870-1 to 4 Topics in Geometry.
899-1 to 18 Graduate Research.

Modern Languages (ML)

Students are responsible for placing themselves on the language level at which they can perform satisfactorily. The following suggested placement pattern should be considered:

0-1 year high school foreign language — 101
2-3 years high school foreign language — 201
4 years high school foreign language — 301

Students are not obligated to follow this suggested placement scale; however, students should keep in mind that some universities do not accept for transfer credit college work that represents a repetition of high school credits.

111-3, 112-3, 113-3, 114-3 Modern Languages Humanities. Study of selected cultures according to language distinctions, with emphasis on their uniqueness within the family of nations. **111:** French Culture; **112:** Germanic Culture; **113:** Spanish Culture; **114:** Spanish-American Culture.

French (FR)

101-4, 102-4, 103-4 First Year French. Objective: to read and understand ordinary French without translation and to speak and write it with increasing ability. Must be taken in sequence.

201-3, 202-3, 203-3. Second Year French. Grammar review, reading and discussion of selected texts, with practice in speaking and writing the language. Must be taken in sequence.

241-3, 242-3, 243-3 Intermediate French Conversation. Practice in every day conversational French. Prerequisite: FR 103 or equivalent or consent of instructor.

244-3 Negritude and Beyond: Black French-Speaking Authors in Translation. An introduction to the work of contemporary black authors writing in French, beginning with the Negritude movement. The work of Senghor, Laye, Cesaire, Dumas, Fanon, and Lumumba will be examined and compared with one another and with English-speaking black writers.

ADVANCED COURSES

FR 201, 202, 203 or their equivalents are the minimum prerequisite for all advanced French courses.

301-3, 302-3, 303-3 French Literature. Survey course. **301:** Nineteenth Century. **302:** Seventeenth and Eighteenth Centuries; **303:** Medieval and Renaissance periods. Prerequisite: FR 203, or four units of high school French or equivalent.

321-3, 322-3, 323-3 French Composition. Oral and written composition in French; translations from English into French. Further grammar study. FR 321, 322, 323 should be taken concurrently with FR 341, 342, 343. Prerequisite: FR 203 or equivalent, or consent of instructor.

341-2, 342-2, 343-2 Advanced French Conversation. This course will be conducted in French. Its subject matter will be for the most part the culture of the French world. FR 341, 342, 343 should be taken concurrently with FR 321, 322, 323. Prerequisite: FR 243 or equivalent, or consent of instructor.

351-3 French Civilization. Study of the main currents of French civilization with special emphasis on the development of literary and cultural aspects of the French nation and its place in the modern world. May be given in French.

361-2 French Pronunciation and Diction. Pronunciation, diction, and intonation. Corrective exercises and laboratory work. Prerequisite: FR 203 or equivalent or consent of instructor.

431-2 to 3 Seminar in Nineteenth Century French Short Story. Intensive study of short stories from such authors as Flaubert, Maupassant, etc. Prerequisite: FR 301.

432-2 to 3 Seminar in Seventeenth Century and Tragedy. Intensive study of selected plays of Moliere, Corneille, and Racine. Prerequisite: FR 303.

433-2 to 3 Seminar in French Poetry from Baudelaire to Apollinaire. Prerequisite: FR 303.

450-1 to 3 Independent Undergraduate Research.

462-3, 463-3, 464-3 Twentieth Century French Literature. Readings and reports in (462) the novel, (463) drama, and (464) poetry. Prerequisite: FR 301 or equivalent or consent of instructor.

471-2, 472-2 Linguistics. See LI 471-2, 472-2.

473-3 Phonology of the French Language. An examination of the development of the French language from its beginnings as a dialect of Romance, to the formation of Francien and that of Modern French, with all the intermediate steps. Prerequisite: FR 303 or equivalent or consent of instructor.

474-3 Morphology of the French Language. The study of the syntax and morphology and structure of the French language. Prerequisite: FR 473.

481-3, 482-3 Independent Reading for Advanced Students.

German (GER)

101-4, 102-4, 103-4 First Year German. Objective: to read and understand ordinary German without translation and to speak and write it with increasing ability. Must be taken in sequence.

201-3, 202-3, 203-3 Second Year German. Grammar review (first part of 201), reading and discussion of selected texts, with practice in speaking and writing the language. Must be taken in sequence.

ADVANCED COURSES

GER 201, 202, 203 or their equivalents are the minimum prerequisite for all advanced German courses except 351, 352, 353, which are open to any juniors or seniors.

215-3, 216-3, 217-3 Scientific German. Intensive reading in all areas of expository and technical German. Prerequisite: GER 103. Must be taken in sequence.

301-3, 302-3, 303-3 Survey of German Literature. An historical survey of German Literature from its beginning to the present. Prerequisite: GER 203, or four units of high school German, or the equivalent.

321-3, 322-3, 323-3 German Composition. Oral and written composition in German; translations from English into German. Further grammar study. It should be taken concurrently with GER 341, 342, 343. Prerequisite: GER 203 or equivalent or consent of instructor.

341-2, 342-2, 343-2 German Conversation. This course will be conducted in German. Its subject matter will be for the most part the culture of the German-speaking world. It should be taken concurrently with GER 321, 322, 323. Prerequisite: GER 203 or equivalent or consent of instructor.

351-3 German Culture and Civilization I. A survey of culture and institutions. Prerequisite: GER 303.

352-3 German Culture and Civilization II. A survey of culture and institutions. Prerequisite: GER 303.

353-3 **German Culture and Civilization III.** A study of present day German institutions: political, social, economic, religious, educational, cultural. Conducted in German. Prerequisite: GER 303.

361-3 **Introduction to Germanic Folklore.** A survey of Germanic folklore as it relates to literature. Prerequisite: consent of instructor, junior or senior standing.

405-3 **Early German Literature.** German literature from the earliest times to the Reformation. Prerequisite: GER 303 or consent of instructor.

406-3 **Renaissance and Reformation.** Representative German authors of the period. Prerequisite: GER 303 or consent of instructor.

410-3 **Baroque.** Representative German authors of the period. Prerequisite: GER 303 or consent of instructor.

415-3, 416-3 **German Literature of the Eighteenth Century.** (415) Study of Representative Authors in Roccoco, Enlightenment, and Storm and Stress (416) Goethe and Schiller. Prerequisite: GER 303 or consent of instructor.

417-3 **German Romanticism.** Study of the Romantic Movement. Prerequisite: GER 303 or consent of instructor.

418-3 **Goethe's Faust.** Intensive study of Faust I and Faust II. Prerequisite: GER 303.

425-3, 426-3, 427-3 **German Literature of the Nineteenth Century.** Readings and reports in Nineteenth Century. **425:** prose; **426:** drama; **427:** poetry and balads. Prerequisite: GER 303 or consent of instructor.

431-3, 432-3, 433-3 **German Literature of the Twentieth Century.** Readings and reports in twentieth century. **431:** prose; **432:** drama; **433:** poetry. Prerequisite: GER 303 or consent of instructor.

434-3 **Thomas Mann.** Studies of the writings of Thomas Mann. Prerequisite: GER 303 or consent of instructor.

442-3 **History of the German Language.**

450-1 to 3 **Undergraduate Research in German.**

471-2, 472-2 **Linguistics.** See LI 471-472.

481-3, 482-3 **Independent Reading for Advanced Students.**

Linguistics (LI)

211-2, 212-2 **Introduction to Greek and Latin Comparative Linguistics.** A linguistic study of the morphology (inflections) of Greek and Latin. Exercises are also provided to give the student some acquaintance with the syntax and vocabulary of both languages. Prerequisite: advanced standing in any language or consent of instructor. (Simultaneous listing as Greek 211, 212 and Latin 211, 212.) Must be taken in sequence.

471-2, 472-2 **Introduction to Historical and Comparative Linguistics.** Principles of the historical and comparative study of languages; introduction to Indo-European, Germanic, and Romance philology; linguistics and cultural history; dialect geography in Europe and the United States. Prerequisite: consent of instructor. (Simultaneous listing as CLS 471, 472, FR 471, 472, GER 471, 472, SPN 471, 472.) Must be taken in sequence.

GRADUATE COURSES

671-2, 672-2 **Introduction to Historical and Comparative Linguistics.**

Russian (RUS)

101-4, 102-4, 103-4 **First Year Russion.** Objective: To read and un-

derstand ordinary Russian without translation and to speak and write it with increasing ability. Must be taken in sequence.

RUS 101, 102, 103 or their equivalents are the minimum prerequisite for all advanced Russian courses.

201-3, 202-3, 203-3 Second Year Russian. Grammar review, reading and discussion of selected texts, with practice in speaking and writing the language. Must be taken in sequence.

301-3, 302-3, 303-3 Russian Literature. Survey course. Prerequisite: RUS 203 or equivalent.

Spanish (SPN)

101-4, 102-4, 103-4 First Year Spanish. Objective: to read and understand ordinary Spanish without translation and to speak and write it with increasing ability. Students who have had Spanish in high school or college will be required to take a placement test prior to enrolling in SPN 101, 102, or 103. Must be taken in sequence.

201-3, 202-3, 203-3 Second Year Spanish. Grammar review, reading and discussion of selected texts, with practice in speaking and writing the language. Must be taken in sequence.

ADVANCED COURSES

SPN 201, 202, 203 or their equivalents are the minimum prerequisite for all advanced Spanish courses except 351, 352, 353, which are open to any juniors or seniors.

301-3, 302-3, 303-3 Spanish Literature. Survey course **301:** from the beginning to the Golden Age; **302:** from the Golden Age to Romanticism; **303:** from Romanticism to the present day. Readings, lectures, reports, and discussions. Prerequisite: SPN 203, or four units of high school Spanish, or equivalent.

321-3, 322-3, 323-3 Spanish Composition. Oral and written composition in Spanish; translations from English into Spanish. Further grammar study. 321, 322, 323 should be taken concurrently with SPN 341, 342, 343. Prerequisite: SPN 203 or equivalent or consent of instructor.

331-3, 332-3, 333-3 Spanish-American Literature. Reading of poetry, novels, and plays. **331:** from pre-Columbian times to the period of Independence; **332:** of the Nineteenth Century; **333:** from Modernism to the present day. Prerequisite: SPN 203 or equivalent or consent of instructor.

341-2, 342-2, 343-2 Spanish Conversation. This course will be conducted in Spanish. Its subject matter will be for the most part the culture of the Hispanic world. SPN 341, 342, 343 should be taken concurrently with SPN 321, 322, 323. Prerequisite: SPN 203 or equivalent or consent of instructor.

351-3 Don Quixote in English Translation. Intensive reading of *Don Quixote* in English translation. Background lectures, discussions, and reports on Cervantes and his time. Not open to Spanish and Spanish education majors. Juniors and seniors only.

352-3 Masterpieces of Hispanic Literature in English Translation. Intensive study of significant authors of the Iberian Peninsula and Hispanic America. Not open to Spanish and Spanish education majors. Juniors and seniors only.

353-3 Comparative Literature Studies in Hispanic Literature in English Translation. Comparative literature study of a selected area of Hispanic literature. Topic to be chosen by the instructor. Juniors and seniors only.

361-2 Spanish Phonetics. Pronunciation and intonation. Corrective exercises and laboratory work. Prerequisite: SPN 203 or equivalent or consent of instructor.

Music: Applied

The following courses require SPN 303 or consent of instructor. When appropriate, additional prerequisites are designated.

401-3 The Spanish Picaresque Novel. Intensive reading of such works as *Lazarillo de Tormes, Vida del Buscon,* and *Guzman de Alfarache.*

402-3 The Spanish Novel of the Nineteenth Century. Nineteenth Century prose works by Galdos and others.

411-3 Golden Age Drama. Intensive readings of dramas by playwrights of the Sixteenth and Seventeenth Centuries.

412-3 Modern Drama. Intensive readings of dramas by playwrights of the Nineteenth and Twentieth Centuries.

421-3, 422-3, 423-3 Cervantes. 421: Intensive study of *Don Quixote,* Part I. 422: Intensive study of *Don Quixote,* Part II. 423: Readings in Cervantes' other works, including *novelas ejemplares, entremeses,* and longer dramatic works. Lectures, discussions and oral reports on Cervantes and his time. SPN 421 is prerequisite to SPN 422.

431-2 to 3 Seminar in Spanish Literature. Intensive study of selected topics in peninsular literature. Background lectures, oral reports, and discussions.

432-2 to 3 Seminar in Spanish-American Literature. Intensive study of selected topics in Spanish-American literature. Background lectures, oral reports, and discussions. Prerequisite: SPN 333 or consent of instructor.

441-3 Contemporary Spanish Literature. Readings in the novel, poetry, and drama of major Spanish writers in the post-Civil War period.

442-3 Contemporary Latin-American Literature. Readings in the novel, poetry, and drama of various Latin-American writers from the late 1930's to the present day. Prerequisite: SPN 333 or consent of instructor.

450-1 to 3 Undergraduate Research in Spanish.

462-3 The Generation of 1898. Novel, poetry, and theatre of Unamuno, Baroja, and others.

471-2, 472-2 Linguistics. See LI 471, 472.

481-3, 482-3 Independent Reading for Advanced Students.

Music (MUS)

Applied Music

Private instruction is offered in the fields of concentration as listed below. Subject to the regulations of the academic division in which the student is registered, each half-hour lesson per week may carry one or two credit hours per quarter at the undergraduate level, depending upon the level of proficiency demonstrated by the student. All non-music majors, as well as music majors, must receive departmental approval before registration in applied music.

100-1, 2, or 4	**Piano**	**190-1, 2, or 4**	**Viola**
110-1, 2, or 4	**Voice**	**200-1, 2, or 4**	**Cello**
120-1, 2, or 4	**Clarinet**	**210-1, 2, or 4**	**String Bass**
130-1, 2, or 4	**Flute**	**220-1, 2, or 4**	**Oboe**
140-1, 2, or 4	**Trumpet**	**230-1, 2, or 4**	**Bassoon**
150-1, 2, or 4	**Trombone**	**240-1, 2, or 4**	**Saxophone**
160-1, 2, or 4	**Organ**	**250-1, 2, or 4**	**Baritone Horn**
170-1, 2, or 4	**French Horn**	**260-1, 2, or 4**	**Tuba**
180-1, 2, or 4	**Violin**	**270-1, 2, or 4**	**Percussion**

261-2, 262-2 Pronunciation of Foreign Languages. Designed for students of singing. Study of the individual sounds of each language is followed by intensive readings of song lyrics. Given in alternate years.

320-2 Opera Production. For advanced singers in the production of opera, culminating in public performance. To be taken in conjunction with MUS 420. Prerequisite: consent of instructor.

420-1 Opera Coaching. Individual coaching correlative with MUS 320. One 30-minute private lesson per week. Prerequisite: current enrollment in MUS 320; assignment of a major role in the work to be staged for public performance.

441-1, 442-1 Pedagogy. Fundamental problems involved in studio teaching. Critical analysis of teaching materials. Observation and practice in private teaching required. Prerequisite: senior standing in applied music. Must be taken in sequence.

Ensembles

Credit is subject to the regulations of the academic division in which the student is enrolled. Students who are not majoring in music may enroll with or without credit. Enrollment is open to all students in the university.

105-1 University Chorus.

115-1 University Band.

125-1 University Stage Band (audition)

135-1 University Orchestra.

155-1 Class Piano (Department Permission)

175-1 Accompanying (for pianists only)

185-1 Men's Glee Club.

195-1 University Chamber Singers (audition)

205-1 Chamber Music (audition)

Theory of Music

101-3, 102-3, 103-3 Theory of Music. Theoretical study of music including written exercises, form and analysis, and keyboard harmony. Required of all music majors, but open to all students of the university. Concurrently with MUS 151-152-153. Must be taken in sequence.

116-1 Introduction to the Theory of Music. An introductory course, open to all students in the university. A remedial course for first-year music majors; does not give credit toward any degree for a music major.

151-1, 152-1, 153-1 Sight Singing and Dictation. Required concurrently with MUS 101, 102, 103. Must be taken in sequence.

201-3, 202-3, 203-3 Music Theory. Continuation of MUS 101, 102, 103. Part-writing, analysis, and keyboard harmony on a more advanced level. Must be taken in sequence. Prerequisite: MUS 101, 102, 103; 151, 152, 153. Concurrently with MUS 251, 252, 253.

251-1, 252-1, 253-1 Sight Singing and Dictation. Continuation of MUS 151, 152, 153. Required concurrently with MUS 201, 202, 203. Must be taken in sequence. Prerequisite: MUS 101, 102, 103; 151, 152, 153.

301-3, 302-3, 303-3 Counterpoint. Must be taken in sequence. Prerequisite: MUS 201, 202, 203; 251, 252, 253.

351-1, 352-1, 353-1 Advanced Sight Singing and Dictation. Must be taken in sequence. Prerequisite: MUS 201, 202, 203; 251, 252, 253.

401-3, 402-3, 403-3 Form and Analysis. Harmonic and formal analysis: phrases, periods, linary and ternary forms; themes and variation,

rondo, sonata — allegro forms; contrapuntal forms. Must be taken in sequence.

421-2, 422-2, 423-2 Orchestration. Tone quality and ranges of orchestral instruments; voice qualities and ranges of choral ensembles; written assignments in each area. Must be taken in sequence. Prerequisites: MUS 201, 202, 203; 251, 252, 253.

431-3, 432-3, 433-3 Canon and Fugue. Introduction to the technique of canonic writing and to the composition of the fugue. Must be taken in sequence. Prerequisites: MUS 301, 302, 303.

471-3, 472-3, 473-3 Composition. Creative writing in smaller forms. The purpose is to provide experience in creating original pieces in shorter forms for various media. Must be taken in sequence. Prerequisites: MUS 201, 202, 203; 301, 302, 303.

Music History and Literature

111-3 Introduction to Music Listening. Introduction to techniques for listening to art music; brief historical survey of Western music from medieval times through the nineteenth century.

112-3 Twentieth Century Music. Developments in Western music in the last century: Impressionism, Expressionism, Serial Music, Neo-Classicism, the Jazz Influence, Electronic Music.

121-3, 122-3, 123-3 Survey of Musical Styles. Principal types of Western music from c. 300 A.D. to the present, presented through aural analysis of technical qualities in relation to music expression. Must be taken in sequence.

311-3, 312-3, 313-3 History of Music. History of music from the ancient and medieval periods through the renaissance, baroque, classical, and romantic periods, and music of the twentieth century. Must be taken in sequence. Prerequisites: MUS 121, 122, 123; 101, 102, 103.

321-3, 322-3, 323-3 Music of the Twentieth Century. Must be taken in sequence. Prerequisites: MUS 311, 312, 313.

331-3, 332-3, 333-3 Music Literature. A survey of representative compositions of those composers, chiefly of the nineteenth century, whose works are most frequently performed in current solo, chamber, and symphonic programs. Introduces the popular masterworks to students with little or no previous musical experience. Open to all students of the university; does not give credit toward a degree for a music major. Must be taken in sequence.

411-2, 412-2, 413-2 Vocal and Instrumental Music of Western Civilization. Thorough study and analysis of selected representative vocal and instrumental works from major composers of the baroque period, c. 1600-1750; the pre-classical and classical period, c. 1730-1830; and the romantic period, c. 1820-1900, with special attention toward their stylistically appropriate performance. Must be taken in sequence. Prerequisite: consent of instructor.

451-2, 452-2, 453-2 Piano Literature. Comprehensive study of the literature for the piano from the preclassic era to contemporary times. Prerequisites: MUS 101, 102, 103; 201, 202, 203. Open to piano majors; other students only by consent of instructor. Must be taken in sequence.

461-3, 462-3, 463-3 American Music. Music in the United States from 1620 to the present, with emphasis on national idioms and native composition. Must be taken in sequence. Prerequisites: MUS 121, 122, 123; 201, 202, 203.

481-1 to 6, 482-1 to 6 483-1 to 6 Advanced Studies in Special Subjects. Opportunity is offered properly qualified upperclass, graduate, and special students to pursue individual research. Approval of the department chairman is required. Must be taken in sequence.

145-1, 146-1, 147-1 Voice Class Methods and Materials. Organization of and procedure for developing elementary, junior, and senior high school vocal groups. Evaluation of materials. Must be taken in sequence.

165-3 Fundamentals of Music for the Classroom Teacher. Theory, sight singing, and keyboard. Recital attendance required. For four-year elementary education majors.

215-1, 216-1, 217-1 String Instruments. Class instruction in the string instruments of the symphony orchestra. Survey of materials and basic approaches to string teaching. Must be taken in sequence.

224-1, 225-1, 226-1 Brass and Percussion Instruments. Class instruction in brass and percussion instruments of the symphony orchestra and symphonic band. Must be taken in sequence.

227-1, 228-1, 229-1 Woodwind Instruments. Class instruction and pedagogy in woodwind instruments of the symphony orchestra and symphonic band. Must be taken in sequence.

265-3 Music Literature for Children. Survey of musical forms appropriate for use in the elementary classroom. Development of basic symphonic repertoire of program music. Prerequisite: MUS 165. Recital attendance required.

323-3, 324-3 Methods in Music: School Bands, Orchestra, and Ensembles. Techniques of instrumental class instruction, materials, problems, and administration of instrumental music in public schools. Must be taken in sequence.

328-4, 329-4 Music in the Elementary, Junior, and Senior High School. Organization and administration of music in the elementary, junior, and senior high school curriculum: rote songs, rhythmic and tonal problems, vocal, instrumental, humanities, the changing voice, musical ensembles, materials, problems. Prerequisites: at least a minor in music and MUS 101, 102, 103, 151, 152, 153, 121, 122, 123.

335-3, 336-3 Conducting. Fundamentals and principles of baton techniques and score reading. Vocal production for choral development; organization of choral rehearsal and performance; testing and placement of voices with particular attention to changing voices; program building; study of musical factors involved in training instrumental groups.

365-3 Music in the First Six Grades. Rote songs, rhythmic and tonal problems. For four-year elementary education majors. Prerequisites: MUS 165, 265. Recital attendance required.

410-3 to 6 Advanced Study in Elementary School Music. Problems of classroom teachers; participation in musical experiences to increase teacher appreciation. For elementary teachers and supervisors. Prerequisite: student teaching or experience.

430-2 Methods of Teaching Piano. Problems and procedures in teaching individuals and classes; evaluation of instructional material; observation of piano classes. Prerequisite: consent of instructor.

433-2 Supervision of School Music. Selection of and research in some of the problems in vocal and instrumental teaching and supervision. Prerequisite: senior study in music.

493-3 Administration and Organization of Instrumental Music in the Public Schools. Survey of materials and organization of bands, orchestras, and ensembles. Study of curriculum and scheduling problems. Prerequisite: senior study of music.

494-2 Problems of School Music. Selection of and research in some of the problems in vocal and instrumental teaching and supervision. Prerequisite: senior study in music.

Graduate Courses

681-1 to 6, 682-1 to 6, 683-1 to 6 Advanced Studies in Special Subjects.

Office Administration (OA)

201-3 Beginning Shorthand. Development of a vocabulary in Gregg Diamond Jubilee series shorthand. Not open to students with one year of high school shorthand.

202-3 Intermediate Shorthand. Continued vocabulary development in Gregg shorthand. Emphasis on dictation and ability to transcribe accurately. Prerequisites: OA 201 or one year of high school shorthand, and OA 211 or equivalent.

203-3 Advanced Shorthand. Emphasis on dictation and speed building in Gregg shorthand. Introduction to transcription. Prerequisite: OA 202 or two years of high school shorthand instruction.

211-2 Beginning Typewriting. A mastery of the basic skills in touch typewriting. The typing of letters, reports, short tabulations, themes, etc. Open to any student with less than one year of high school typewriting instruction, or equivalent.

212-2 Intermediate Typewriting. Development of speed and accuracy with the introduction to production typewriting of letters, reports, tabulations, and manuscripts. Prerequisite: one year of high school typewriting instruction or OA 211.

213-2 Advanced Typewriting. Further development of speed and accuracy with emphasis on business letters, tabulation problems, business reports, and manuscripts. Introduction to typewritten transcription from office dictation equipment. Prerequisite: OA 212.

301-3 Beginning Transcription. Introduction to typewritten transcription from dictation. Prerequisite: OA 203 and OA 212.

302-3 Intermediate Transcription. Continued development of typewritten transcription from dictation. Prerequisite: OA 301.

303-3 Advanced Transcription. A terminal course in transcription with emphasis on the ability to use a high degree of language skill. Prerequisite: OA 302.

305-2 Office Machines. An introduction to adding machines, rotary calculators, listing calculators, and their application to business problems. Open only to students in business education and office administration.

401-1 to 3 Office Practicum. Selected and supervised work experience in an office. Sixty clock-hours of work for each credit. Prerequisite: junior or senior standing in office administration or business education.

402-1 to 3 Problems in Office Administration. Research on a topic in office administration which is of particular interest to the student and which meets the approval of the department. Research is done under the guidance and direction of a staff member. Prerequisite: junior or senior standing in office administration or business education.

405-1 Records Management. Principles and procedures of records management and administration. Prerequisite: junior or senior standing in office administration or business education.

411-3 Office Management and Administration. Modern offices and their operating problems. Prerequisite: junior or senior standing in office administration or business education.

Philosophy (PHL)

111-3, 112-3, 113-3 Introduction to Philosophy. Classical and contemporary philosophy. No sequence requirements.

115-3 Inductive Logic. An introduction to the techniques of inductive and probabilistic reasoning with special emphasis on the problems encountered in attempting to justify those techniques.

123-3 Deductive Logic. An introduction to the techniques of deductive logic, including truth-table analysis, the propositional calculus, and predicate logic. Problems encountered in these techniques shall be examined.

124-3 to 4 Social Ethics and Values. Analysis of fundamental values in our social order.

Advanced Courses

Prerequisite: PHL 111, 112, 113 or junior or senior standing.

301-3, 302-3, 303-3 History of Philosophy. Foundations of philosophical thought in Greek, Roman, and medieval times. The development of modern thought from the Renaissance to recent times.

311-3 to 4 Ethics. Survey of Oriental, Greek, Christian, and modern philosophies of life, construction of individual conception of the good life.

312-3 to 4 Moral Problems. Discussion of problems of the good life, including happiness, duty, conscience, economic and penal justice, marriage, patriotism, war, etc.

322-3 Philosophical Logic. The purpose of this course is to acquaint the student with some major doctrines and problems in philosophical logic, and to attempt to get closer to the truth about some of these matters. Prerequisite: Philosophy 123.

323-3 to 4 Symbolic Logic. Standard notations, principles of inference, formal systems, methods of proof. Chief attention to first-order predicate logic. Prerequisite: three credit hours of logic or consent of instructor.

331-3 to 4 Political Philosophy. Language of government and community action and traditional arguments in political philosophy.

341-3 to 4 Aesthetics. Philosophy of criticism, and such topics as appreciation, the nature of the work of art, beauty, significance of the special arts.

351-3 to 4 Great Scientists and Recent Philosophy: Darwin, Marx, Freud, Einstein. Details concerning the impact of great scientists on philosophical thought on values.

371-3 Business Ethics. Case study and discussion of ethical issues involved in business transactions and management.

392-3 to 4 Philosophy of Religion. Inquiry into major philosophical problems relating to religion, and critical examination of selected philosophical issues that arise from the cross-cultural studies of historic and secular religions as well as from the inter-disciplinary studies of religion such as the psychology, sociology, and anthropology of religion. (Offered jointly with the Department of Religion; see REL 392.)

401-3 Major Philosophers. An introduction to the major writings of outstanding philosophers. This course will involve a presentation and critical examination of the philosopher's views. (May be taken more than once.)

405-3 to 4 Science and Culture. Prerequisite: senior standing. Not open to majors in philosophy.

406-3 to 4 History, Literature, and the Social Scene. Prerequisite: senior standing. Not open to majors in philosophy.

411-3 to 4 Advanced Ethical Theories. Critical analysis of the good and the right according to classical and contemporary theories. Additional prerequisite: PHL 311 or 312 or 313.

415-3 Philosophical Problems. A detailed examination of one of the outstanding philosophical problems — ancient, medieval, and/or contemporary. (May be taken more than once.)

The following courses require 18 credit hours of philosophy or approved related subjects. At least eight hours must be in advanced courses.

423-3 to 4 Advanced Logic. (Offered jointly with the Department of Mathematics.) This course treats logic as an object rather than a subject. Although it contains extensions to higher order logic, its main concern will be with the use of logic and with the limitations of logical systems. Prerequisites: PHL 123 and 323, or one of these together with one mathematics course beyond calculus, or consent of instructor.

424-3 Mathematical Philosophy. The purpose of the course will be to help the student to some knowledge of some important philosophical doctrines concerning mathematics, and to give him some practice in thinking philosophically about mathematics. Special attention will be given to the great developments of the late 19th and early 20th centuries, and to effects which these developments have had upon 20th century philosophy. Prerequisites: Philosophy 322 or 323 or 463 or 465 or consent of the Instructor.

425-3 The Philosophy of Language. An introduction to different theories of meaning, to different theories of signs, and to the problems of ambiguity, vagueness, denotation, connotation, and metaphor.

437-3 to 4 Modern Idealism. Major issues and themes, emphasis upon contemporary relevance.

442-3 to 4 Philosophy of Literature. Prerequisite: 18 hours of literature, at least nine of which are advanced, or consent of instructor.

464-3 to 4 Existentialism. Representative writers of the Existentialist movement.

465-3 to 4 Analysis. Recent analytic philosophy with attention to types of problems and methods of analysis employed to the nature of results achieved.

467-3 Philosophy of Mind. The purpose of this course will be to give the student some knowledge of some important Doctrines concerning the mind, and to help him to improve his ability to think about the mind. Prerequisites: Philosophy 111-112-113 or Junior or Senior standing.

471-3 to 4 Philosophy of Physical Science. Prerequisite: 18 hours of natural science, mathematics, or philosophy, at least nine of which are advanced.

472-3 to 4 Philosophy of Social Science. Prerequisite: 18 hours of social science, at least nine of which are advanced, or PHL 471.

481-3 to 4, 482-3 to 4, 483-3 to 4 Independent Reading.

495-3 to 4 Metaphysics. World views and categorical analysis.

496-3 to 4 Epistemology. Origin, certainty, and extent of human knowledge.

Graduate Courses

624-3 Mathematical Philosophy.

664-3 to 4 Existentialism.
667-3 Philosophy of Mind.
695-3 to 4 Metaphysics.
696-3 to 4 Epistemology.

Physical Education (PE)

281-3 Physical Education for the Elementary School. Curriculum and materials for elementary school physical education, with emphasis on objectives, evaluation, planning, resources and facilities, and curricular trends. (Required of all students preparing to teach in the elementary school.)

Physics (PHY)

101-0, 102-0, 103-0 College Physics Laboratory. Laboratory problems at the introductory level. Designed to be taken simultaneously with PHY 111, 112, 113. Corequisite: PHY 111, 112, 113.

111-4, 112-4, 113-4 College Physics. An introductory survey of the fundamental phenomena, principles, and laws of physics. Meets minimum medical school entrance requirements in physics. The laboratory requirements of this course must be satisfied by simultaneous enrollment in PHY 101, 102, 103. Prerequisite: MTH 102 or equivalent high school preparation.

121-4 From Apples to Spaceships. The evolution of science and the scientific world view will be studied by tracing the development of mechanics and energy concepts from Galileo and Newton through Einstein. Application to space travel, relativity, and other topics of current interest will be discussed. The laboratory will stress the methods of scientific investigation. Prerequisites: none.

122-4 The Nuclear Atom. The microscopic structure of matter will be studied. This will start with the atomistic theory applied to gases and crystals and then proceed to the underlying structure. Topics will include: Electricity-Atomic Glue, Quantum Theory and Atoms, The Nucleus and Nuclear Energy, and Fundamental Particles. The laboratory will stress relating everyday phenomena to basic physical principles. Prerequisites: none.

123-4 Physics of the Earth and Sky. Geophysics and astronomy are studied to learn about the structure of the physical universe on a large scale. Topics will include: Geophysics-Planet Earth, The Solar System, Stars and Galaxies, Cosmology, and the Frontiers of Astrophysics. The laboratory will include astronomical observations and studies of properties of the earth. The laboratory is scheduled at night. Prerequisites: none.

150-1, 151-1, 152-1 Contemporary Concepts in Physics. Modern physics is discussed with the emphasis placed on recent developments. Topics range from astrophysics to molecular and nuclear physics. (This course is given on a pass-unsatisfactory grading system.) Prerequisites: none.

200-0, 201-0, 202-0 General Physics Laboratory. Laboratory problems at the introductory level. Designed to be taken simultaneously with PHY 240, 241, 242. Corequisite: PHY 240, 241, 242.

209-4 General Physics. A course in selected topics in mechanics and electricity and magnetism. Designed to follow PHY 111-112-113 and introduces the use of calculus in the interpretation of physical phe-

nomena. Prerequisite: PHY 113 and completion or current registration in MTH 232.

223-3 Introduction to Stellar Astronomy. An introductory survey of the properties, structure, and evolution of stars and stellar systems; the distribution of stars and interstellar matter in the galaxy; galaxies and cosmology. This course is designed for all students with an interest in the astronomical universe. Some familiarity with astronomical and physical terms and algebra will be presupposed. Students with a minimal background should first take PHY 123.

230-4 Introduction to Modern Physics. An elementary introduction to the phenomenology and theoretical concepts of modern physics. Special theory of relativity and the quantum theory. Atomic and molecular structure and spectra. X-rays and solid state physics. Nuclear structure, reactions, and natural radioactivity. Instrumentation for nuclear physics research. This course includes one 3-hr. laboratory. Prerequisite: MTH 231 and PHY 242 or 209.

240-5, 241-5, 242-5 General Physics. An introductory survey of the fundamental phenomena, principles, and laws of physics. Calculus is utilized in the interpretation of physical phenomena. For science and engineering students. The laboratory requirements for this course must be satisfied by simultaneous enrollment in PHY 200, 201, 202. Prerequisites: MTH 132 for PHY 240, MTH 133 for PHY 241-242. Well-qualified students may be simultaneously enrolled in MTH 132 with PHY 240 and in MTH 133 with PHY 241-242.

270-4, 271-4, 272-4, 273-4. General Physics. Same as PHY 240-241-242. Open primarily to evening students. Laboratory is included in this course and requires no separate registration. Prerequisite: MTH 132 for PHY 270, MTH 133 for PHY 271-272-273.

300-3, 301-3 Introduction to the Physics of Solids. Selected concepts in quantum physics. Crystal structure, X-ray diffraction, imperfections, metallic solutions and compounds, mechanical properties. Electronic structure of solids: metals, semiconductors, and insulators. Applications: semiconductor devices, metal alloys, dielectrics, magnetics, and superconductivity. Prerequisites: PHY 242, CHM 121, and MTH 233, or permission of instructor. PHY 230 recommended but not required. PHY 300 prerequisite to 301.

314-2 Intermediate Physics Laboratory. Laboratory problems at the intermediate level. A laboratory course in which the student has the opportunity to acquaint himself with a wide variety of experimental techniques in many areas of classical and modern physics. Prerequisite: Completion or current enrollment in PHY 230 or consent of department. Repeatable.

322-3 Applied Optics. A study of optical instruments by means of both geometric and physical optics. The theory and applications of interferometry and light detection devices. A brief introduction to lasers and holography. To be accompanied by optical experiments in PHY 314 or 494. Prerequisites: MTH 232, PHY 242, or equivalents; simultaneous registration in PHY 314 or 494. PHY 230 strongly recommended.

350-3, 351-3, 352-3 (see also 650-3, 651-3, 652-3) Electricity and Magnetism. The fundamental laws of electricity and magnetism presented from the viewpoint of fields. Maxwell's equations, transient and steady state currents, electric and magnetic properties of matter, electromagnetic radiation. Prerequisites: MTH 233 and PHY 242 or 209.

371-3, 372-3 (see also 671-3, 672-3) Analytical Mechanics. Intermediate problems in statics, kinematics, and dynamics; the study of equilibrium of forces, rectilinear motion, curvilinear motion, central forces, constrained motion, energy and moments of inertia, and the Lagrange method. Prerequisite: PHY 242 or 209. Corequisite: MTH 233.

420-3 (see also 620-3) Thermal Physics I. First and second laws of thermodynamics: general thermodynamic formulas with applications to matter. Prerequisites: MTH 233 and PHY 242 or 209.

421-3 (see also 621-3) Thermal Physics II. Kinetic theory of gases. Maxwell-Boltzmann statistics, introduction to quantum statistics. Prerequisite: PHY 420.

423-3 (see also GL 423-3) Geophysics I. Study of the theory, observation, and analysis of seismic and gravitational phenomena as observed on the earth's surface. Prerequisites: GL 102 and PHY 242 or 209.

424-3 (see also GL 424-3) Geophysics II. Analytical treatment of the electrical and magnetic properties of the earth and their application to the study of rock bodies. The principles and applications of paleomagnetism. The principles of natural and induced radioactivity and their application to exploration and well logging. Prerequisites: GL 102 and PHY 242 or 209.

425-3 (see also GL 425-3) Geophysics III. Laboratory and field exercises analyzing local geologic structures by geophysical methods. Prerequisites: PHY 423, 424 or GL 423, 424, or GL 422.

426-1 (see also GL 426-1) Geophysics Seminar I. Selected topics in geophysics centered about regular student presentations. Prerequisites: PHY 423 or GL 423 or 422.

427-1 (see also GL 427-1) Geophysics Seminar II. Selected topics in geophysics centered about regular student presentations. Prerequisites: PHY 424 or GL 424 or 422.

430-2 to 4 (see also 630-2 to 4) Electronics. A study of the basic theory and application of tubes and transistors in present day circuitry as found in research instrumentation. Prerequisite: PHY 242 or equivalent.

442-4 (see also 642-4) Physical Optics. A study of the interaction of light and matter and the interpretation of these phenomena using both the wave nature and the quantum theory of light. Includes interference, diffraction, absorption, scattering, and polarization. Prerequisite: PHY 352, MTH 333.

460-3, 461-3, 462-3 (see also 660-3, 661-3, 662-3) Modern Physics. A detailed study of many aspects of modern physics including relativity, quantum mechanics, atomic structure and spectra, X-rays, nuclear structure and reactions, fundamental particles, and cosmic radiation. Prerequisite: PHY 372, 352, MTH 333.

470-3 Selected Topics. A course on a selected topic in physics. Prerequisite: PHY 372 and consent of the department. Repeatable.

480-3, 481-3, 482-3 (see also 680-3, 681-3, 682-3) Introduction to Theoretical Physics. An introduction to classical theoretical physics. Emphasis on mechanics, electromagnetic field theory, and mathematical techniques. Prerequisite: PHY 372, PHY 352, MTH 333, and consent of the department.

488-1 to 3 Independent Reading. Repeatable. Prerequisite: consent of the department. PHY 240-241-242 or equivalent.

494-2 Senior Laboratory. Selected problems in experimental and theoretical physics with critical analysis of the results. Prerequisite: senior standing in physics. Repeatable.

499-3 Special Research Problems. Special research in a recognized branch of physics, usually related to the research carried on by the department. A critical analysis of the results is required. Prerequisite: senior standing in physics, consent of department. Repeatable.

Graduate Courses

600-3†, 601-3† Introduction to the Physics of Solids.

620-3† Thermal Physics I.

621-3† Thermal Physics II.
630-2 to 4† Electronics.
642-4 Physical Optics.
650-3†, 651-3†, 652-3† Electricity and Magnetism.
660-3, 661-3, 662-3 Modern Physics.
671-3†, 672-3† Analytical Mechanics.
680-3, 681-3, 682-3 Introduction to Theoretical Physics.
700-3†, 701-3†, 702-3† Mathematical Physics.
704-2†, 705-2†, 706-2† Philosophy of Physics.
710-3, 711-3, 712-3 Quantum Mechanics.
720-4 Statistical Physics.
730-3, 731-3, 732-3 Solid State Physics.
740-3, 741-3, 742-3 Nuclear Physics.
751-4 Atomic Spectra and Structure.
762-4 Molecular Spectra and Structure.
770-3 Selected Topics.
780-3, 781-3, 782-3 Plasma Physics.
799-1 to 5 Minor Problems.
800-1 Seminar.
899-1 to 15 Research.

Political Science (PLS)

111-3 Introduction to Political Science. An introduction to the nature and scope of political science; the role and function of political systems; and the nature of political power.

112-3, 113-3 American Government. The introductory course for the study of the political behavior, institutions, processes and problems of the American political system.

122-3, 123-3 International Politics. A study of the actors, dynamics, strategies, and systems of politics at the international level with emphasis on the struggle for power. May be taken out of sequence.

Advanced Courses

Open to those who have had nine quarter hours of social science or with permission of the instructor.

204-3 Modern Political Ideologies. A systematic analysis of the major political ideologies of the twentieth century, with particular attention to democracy, fascism, communism, and nationalism.

210-3 Introduction to Quantitative Methods of Political Science. The uses of quantitative political data with emphasis on contemporary research applications. Survey design and questionnaire construction. Analysis and interpretation of data. Prerequisite: PLS 111 or permission of instructor.

225-4 Metropolitics. Governments and politics of metropolitan regions; government structure and functions; interest and power relations. 2 lect., 1 lab. Prerequisite: PLS 111.

226-3 State Government. A survey and analysis of the structures and functions of the American states, with special attention to the problems of federal-state and state-local relations, legislative apportionment, and urban growth. Prerequisite: PLS 225.

231-3 Political Parties. The development of the American political

†Not available for graduate credit toward the MS degree in Physics.

party system; functions of parties in democratic systems; nomination and election processes in the United States. PLS 112, 113 recommended.

240-3 Law and Society. Theories of law; the nature and functions of the judicial process.

250-3 Introduction to Comparative Politics. Study of the theories of comparing national political systems with emphasis on methods. Prerequisite: PLS 111.

271-3 Current World Problems. Various views and perspectives on selected contemporary problems and trends in international politics.

305-3 Comparative Marxist Theory. A critical examination of the chief theories developed by Marx, Engels, Lenin, Stalin, Mao Tse-tung, Castro, and various revisionists. Special emphasis will be placed on Soviet and Chinese ideologies.

310-3 Empirical Political Theory. The scope of political science — traditional, behavioral, and post-behavioral orientations. The scientific study of politics — concepts and hypotheses, explanation and prediction. Approaches to the study of politics — systems theory, functionalism, communication theory, game theory, and decision theory. Prerequisites: PLS 111 or permission of instructor.

321-3 The American Presidency. The evolution of the president as a policy leader. An analysis of the varied functions and roles associated with the presidency; the limits and opportunities of presidential power. PLS 112, 113 recommended.

322-3 The Legislative Process. An examination of legislative functions in the making of public policy in the United States. Primary attention given to Congress but including comparative analysis of American state and non-American legislative bodies. PLS 112, 113 recommended.

326-3 Government of Ohio. Organization and functions of the government of Ohio, with special attention to development, social structure, legal status, electoral processes, and fiscal problems.

328-3 Governmental Aspects of City Planning. The institutional and political context of planning; laws, governmental structures, and procedures; urban politics. Prerequisite: PS 225 or permission of instructor.

332-3 Public Opinion. The opinion formation process in democratic and nondemocratic systems; primary concern for the relationship of public opinion to public policy in American government; the role of pressure groups and the mass media in the stimulation and transmission of public opinion; an examination of opinion measurement techniques and an evaluation of their significance. PLS 112, 113 recommended.

340-3 Constitutional Law. Cases in which provisions of the Constitution have been judicially interpreted: federal system; separation of powers; limits on government.

341-3 Civil Liberty and the Law I. Cases and related materials on the Bill of Rights and the Fourteenth Amendment; emphasis on the First Amendment freedoms.

342-3 Civil Liberty and the Law II. Cases and related materials on the Bill of Rights and the Fourteenth Amendment; emphasis on the nature of due process, criminal rights, and equal protection of the law.

343-3 Administration Law. The law of public officers; types of powers exercised by administration authorities; scope and limits of such powers, including relevant aspects of procedural due process and remedies against administrative action.

345-3 Public Administration. Nature and scope of public administration; administrative law; public interest in the administrative process.

346-3 Public Personnel Administration. Methods of employment, training, compensation, and employee relations in various levels of civil service; organizations of public employees.

351-3 Political Systems of Western Europe. A comparative study of the political systems of Great Britain, France and West Germany. Prerequisite: PLS 250.

360-3 Politics of the Developing Nations. A comparative analysis of various problems, particularly political, confronting developing nations in nation-building and development.

361-3 Politics of the Middle East. An introduction to the governments and politics of the Middle East, including North Africa, Israel, and the Arab world. Special attention to the Arab-Israeli conflict.

363-3 Political Systems of Southeast Asia. A survey and comparative analysis of selected southeast Asian nations' political systems, with special attention to integrative and disintegrative forces, and the role of great powers in the region. Prerequisite: PLS 250.

369-3 Foundations of Modern Chinese Politics. A critical survey of the aspects of the ecological, historical, social, economic, and ideological foundations of modern China's political development; special attention to the political thought and institutions of imperial and republican China.

380-3 American Foreign Policy. Study of the role of the United States in contemporary international politics and the relationship of the domestic political system to that role. Discussion of current problems.

393-3, 394-3, 395-3 Legal Aid Internship. An internship for students who desire practical experience in a legal services agency. The course entails on-the-job experience in a legal aid society office, readings in related material, and a number of seminars with an instructor and an attorney. Permission of instructor required.

401-3 Classical and Medieval Political Thought. A critical examination of political ideas from 500 B.C. to 1600 A.D. with special attention to those of Plato, Aristotle, Cicero, St. Augustine, St. Thomas Aquinas, Luther, Calvin, and Machiavelli. Limited to juniors, seniors, or permission of instructor.

402-3 Modern Political Thought. A critical examination of political ideas from 1600 to 1900, with special attention to those of Hobbes, Locke, Rousseau, Montesquieu, Hume, Burke, Hegel, Bentham, Marx, and Mill. Limited to juniors, seniors or permission of instructor.

407-3 Seminar in Political Theory. Readings, research, reports, and discussion on selected theorists, topics, and problems. Limited to juniors, seniors, or permission of instructor.

410-3 Seminar in Methodology. Techniques and methods relating to research in political science; traditional and behavioral approaches to the study of political phenomena; application to individual projects and research design. Prerequisite: 12 hours of Political Science.

420-3 Seminar on the American Political System. Selected topics related to the operation and continuing evolution of the American political system; contemporary policy issues; institutional trends and problems; emphasis on discussion, readings, and research. Prerequisite: 12 hours of political science or permission of instructor. May be repeated once.

425-3 Seminar in Metropolitan and Regional Development. Intensive interdisciplinary treatment of metropolitan and regional development. Reading and discussion on pertinent theory, methodology, and case studies. Practical research by students. Permission of instructor required. May be repeated once.

447-3 Problems in Public Administration. Selected problems — national, state, and local; emphasis on legal scope of administrative

power and on research methods used by staff agencies. Prerequisite: PLS 345 or permission of instructor.

453-3 Political System of the Soviet Union. Analysis of the Soviet system with emphasis on the development of the Communist Party. Prerequisite: PLS 250.

460-3 Seminar on Comparative Political Systems. Readings, research, reports, and discussion on selected topics and problems. Permission of instructor required.

461-3 Political System of China: The People's Republic. Analysis of the political structures and processes of Communist China, with special attention to the dynamic factors of socio-economic and political development. Prerequisite: PLS 369.

462-3 Political System of Japan. Analysis of the political structures and processes of Japan with special attention to the dynamic factors of socio-economic development. Prerequisite: PLS 250.

464-3 Contemporary African Politics. Political processes and governmental institutions of Sub-Saharan Africa, with special attention to dynamics of political development and social and economic change. Comparative analysis of selected African political systems.

470-3 Seminar in International Relations. Readings, research, reports, and discussion on selected topics and problems. Permission of instructor required.

471-3 International Law. Study of the rules governing the conduct of international politics with emphasis on their relevance to current world problems. Prerequisite: PLS 122 or 123.

472-3 International Organization. Analysis of the developing structures and functions of the United Nations and other international organizations, and the concepts relating to world government. Prerequisite: PLS 122 or 123.

490-3 Independent Reading. Supervised individual study and readings on selected topics. Should be arranged between the student and that faculty member under whom he wishes to study. Permission of instructor required. May be taken twice.

491-3 Independent Research. Supervised individual research on selected topics. Should be arranged between the student and that faculty member under whom he wishes to study. Permission of instructor required. May be taken twice.

492-3 Independent Field Experience. Supervised individual projects. May involve intern programs in local government or other special programs. Should be arranged between the student and that faculty member under whom he wishes to study. Permission of instructor required.

493-3 Contemporary Problems. Advanced study in selected topics in political science. Topics frequently include new developments in the methodology or subject matter of the various sub-fields of the discipline. Permission of instructor required.

494-3 Workshop in Contemporary Problems. Special courses developed for the study of particular political problems of contemporary significance in the world today. These workshops normally do not follow time patterns scheduled for regular courses. Permission of instructor required.

Graduate Courses

601-3 Classical and Medieval Political Thought.

602-3 Modern Political Thought.

605-3 Comparative Marxist Theory.

607-3 Seminar in Political Theory.

620-3 Seminar on the American Political System.

625-3 Seminar in Metropolitan and Regional Development.
626-3 Government of Ohio.
628-3 Governmental Aspects of City Planning.
630-3 Seminar on the American Political System.
633-3 Public Opinion.
640-3 Constitutional Law.
641-3 Civil Liberty and The Law I.
642-3 Civil Liberty and The Law II.
646-3 Public Personnel Administration.
647-3 Problems in Public Administration.
660-3 Seminar on Comparative Political Systems.
661-3 Political System of China.
662-3 Political System of Japan.
663-3 Political Systems of Southeast Asia.
664-3 Contemporary African Politics.
670-3 Seminar in International Relations.
672-3 International Organization.
680-3 American Foreign Policy.
690-3, 691-3, 692-3 Independent Readings.
693-3, 694-3 Contemporary Problems.

Psychology (PSY)

111-3, 112-3 **Introductory Psychology.** An introduction to basic concepts in the study of human behavior and experience.

Advanced Courses

PSY 111, 112, or special permission of the instructor are minimum prerequisites for all advanced psychology courses.

201-4 (formerly 211-4) **Behavioral Statistics.** An introduction to the principles and techniques of statistical analysis, with emphasis on applications to psychological problems.

202-4 (formerly 485-4) **Intermediate Behavioral Statistics.** Statistical methods and interpretations encountered in experimental studies and presentations of behavioral data. Prerequisite: PSY 201.

212-4 **Experimental Psychology.** An introduction to basic experimental procedures and their applications to psychological research. Prerequisites: PSY 111, 112, 201, or permission of instructor.

321-4 **Industrial Psychology.** Scientific psychological principles, procedures, and methods applied to human performance efficiency in industry. Open to engineering and business students with prior credit in business, mathematical, or behavioral statistics.

325-4 **Social Psychology.** The study of the behavior of individuals as it is influenced by past and/or present interactions with social factors.

326-3 **Methods in Social Psychology.** A laboratory course in the methods and problems involved in research in social psychology. Prerequisites: PSY 201, 212, 325, or permission of instructor.

331-4 **Personality and Adjustment.** Study of the development of normal personality, including problems of adjustment and integration.

341-4 **Psychology of Development.** A survey of basic empirically grounded principles governing the development of children and the young of other species. Developmental phenomena are examined in the areas of cognition and intellect, perception, personality, social behavior, and learning.

361-4, 362-4 Introduction to Motivation and Learning. Experimental findings and contemporary theories of: (361) motivation of behavior; and (362) learning and conditioning. Prerequisite: PSY 201, 212, or consent of instructor.

363-3 Methods in Animal Learning. A laboratory course in the problems and methods of research in animal conditioning. Prerequisites: PSY 201, 212, 362. May be taken concurrently with PSY 362 or with permission of the instructor. Recommended: PSY 202.

372-4 (formerly 371-4, 372-4) Sensation and Perception. A course describing and explaining the physiology and phenomena of sensation and perception. Prerequisite: PSY 201, 212 or consent of instructor.

373-3 Methods in Sensation and Perception. A course demonstrating and offering laboratory experience in research techniques in various topics of sensation and perception. Prerequisites: PSY 201, 212, 372, or permission of instructor.

375-4, 376-4 Physiological Psychology. Survey of the physiological mechanisms of behavior. Emphasis on action and the integration of behavior, motivation, emotion, and learning. PSY 375 must be taken before 376. Prerequisite: PSY 201, 212, or consent of instructor.

377-3 Methods in Physiological Psychology. A laboratory course in the methods and problems involved in research in physiological psychology. Prerequisites: PSY 201, 212, 376, or permission of instructor.

381-4 (formerly 481-4) History of Psychology. Major trends in the development of psychology from its beginning to the modern period. Prerequisites: 111, 112, and consent of instructor.

385-4 Quantitative Psychology. The quantification of human behavior, including scaling techniques.

421-4 (see also 621-4) Engineering Psychology. The application of psychology to equipment design and man-machine relationships. Open to engineering and business students of advanced standing without PSY 111, 112, 113.

425-4 (see also 625-4) Experimental Methods in Social Psychology. A survey of experimental method as it is applied to social psychological problems. Provides experience in both laboratory and field techniques. Prerequisites: PSY 212, 213 and 325 or consent of instructor.

426-4 (see also 626-4) Attitude Structure and Change. Study of attitude as a social psychological concept, including problems of measurement, empirical findings, and theoretical models. Prerequisite: PSY 325 or consent of instructor.

427-4 (see also 627-4) Small Groups. Current theory and research in selected areas of small groups, including communications, group norms and conformity, group structure, leadership. Prerequisite: PSY 325 or consent of instructor.

429-4 (see also 629-4) Interpersonal Relations. A laboratory group for the study of interpersonal relations, in which the group determines the goals and the means of goal achievement and then proceeds toward the goal. Prerequisite: PSY 325 and senior standing and consent of instructor.

431-4 (see also 631-4) Theories of Personality. Contemporary theories of the development, organization, and dynamics of personality. Prerequisite: PSY 331 and advanced standing or consent of instructor.

433-4 (see also 633-4) Exceptional Child. Problems of retarded, gifted, physically handicapped, and emotionally disturbed children. Prerequisite: PSY 341 or equivalent, consent of instructor.

435-4 (see also 635-4) Abnormal Psychology. Causes, symptoms, influence, and prevention of abnormal behavior and their relation to normal behavior. Field trips to appropriate local institutions. Pre-

requisite: PSY 331, senior standing, or consent of instructor.

441-4 Advanced Developmental Psychology. A course whose primary focus is an in-depth examination of descriptive and explanatory models of cognitive, perceptual, and symbolic changes seen during childhood and adolescence. Prerequisite: PSY 341, senior standing, or consent of instructor.

443-4 (see also 643-4) Tests and Measurements. A survey of the basic principles, problems, and techniques of psychological testing with special emphasis on test construction, interpretation, and usage. Prerequisite: PSY 201, 202, 331 or consent of instructor.

455-4 (see also 655-4) Psychology of Language. A survey of experimental findings in the areas of animal communication and human language with special emphasis on their implications for current theories of language. Includes production and reception of speech, acoustic signal, speech mechanism, personality and speech behavior, development and deficiencies, and communication. Open to speech students of advanced standing without PSY 111, 112, 113. Prerequisite: senior standing in psychology or consent of instructor.

456-3 Methods in Psycholinguistic Research. A course demonstrating and offering laboratory experience in research techniques in various topics in psycholinguistics. Prerequisites: PSY 201, 212, two 300-level courses in psychology, PSY 455. May be taken concurrently with 455. Prerequisite: PSY 201, 202, 212, 455, and consent of instructor.

461-4 (see also 661-4) Human Learning Psychology. Phenomena, principles, and problems of learning and retention. Prerequisite: PSY 201, 212, 362.

462-3 Methods in Human Learning and Memory. A laboratory course in the problems and methods of human learning and memory. Prerequisites: PSY 201, 212, 461. Recommended: PSY 202. May be taken concurrently with PSY 461.

463-4 (see also 663-4) Advanced Motivation. A survey of experimental findings in animal and human motivation with emphasis on their implications for current theories of motivation. Prerequisites: PSY 201, 212, 361, or consent of instructor.

465-4 (see also 665-4) Memory. A survey of experimental findings in animal and human memory with emphasis on their implications for current theories of memory. Prerequisite: PSY 212, 213.

471-4 (see also 671-4) Perception. Selected problems in perception with emphasis on theoretical interpretations. Prerequisite: PSY 372 or consent of instructor.

473-4 (see also 673-4) Sensory Processes. A survey of the basic physiology of the senses and the peripheral nervous system. Emphasis is on receptor mechanisms and neural coding processes. Prerequisite: PSY 371 or 375 or consent of instructor.

475-4 (see also 675-4) Neuropsychology. Intensive laboratory involvement with the instrumentation and surgical techniques used in physiological psychology including: GSR, EMG, EKG, and EEG recordings; animal behavioral changes produced by electrical stimulation of the brain and/or lesions of brain structures. Prerequisite: PSY 375-376 or consent of instructor.

478-4 (see also 678-4) Animal Behavior. The physiology, phylogeny, and ontogeny of behavior. Prerequisite: either BIO 111, 112, 113 and 302, or PSY 111, 112, 113 and 212; and consent of instructors. Field trips are planned. Also listed as BIO 478.

488-1 to 4 (see also 688-1 to 4) Seminar in Special Topics. Variable content. Specific topics of the course will be announced in the schedule when course is offered. Prerequisite: advanced standing in psychology or related field and consent of instructor.

499-1 to 3 (see also 699-1 to 3) Independent Research. Original prob-

lems for investigation. Prerequisite: consent of instructor who is selected by the student.

Graduate Courses

621-4 Engineering Psychology.
625-4 Experimental Methods in Social Psychology.
626-4 Attitude Structure and Change.
627-4 Small Groups.
629-4 Interpersonal Relations.
631-4 Theories of Personality.
633-4 Exceptional Child.
635-4 Abnormal Psychology.
643-4 Tests and Measurements.
655-4 Psychology of Language.
661-4 Human Learning Psychology.
662-4 Advanced Learning.
663-4 Advanced Motivation.
665-4 Memory.
671-4 Perception.
673-4 Sensory Processes.
675-4 Neuropsychology.
678-4 Animal Behavior.
681-4 History of Psychology.
685-4 Intermediate Statistics.
688-1 to 4 Seminar in Special Topics.
699-1 to 3 Independent Research.

Religion (REL)

111-3, 112-3, 113-3 Religion in History and Culture. An introduction to the historical development and cultural functions of selected religious traditions, e.g., Hinduism, Buddhism, Confucianism, Judaism, Christianity, and Islam. **111:** Selected Eastern Religions; **112:** Selected Western Religions; **113:** Contemporary Issues in Eastern and Western Religions. *Students may enter at any quarter of the sequence.*

200-3 Literature and Religion of Ancient Israel (Old Testament). Introduction to the literature, history, and religion of Ancient Israel.

201-3 Post-Biblical Judaism. Introduction to the varieties of literature and religion in Jewish sects from the Exile (c. 500 B.C.E.) to the publication of the Mishnah of Judah the Prince (200 C.E.), including the Dead Sea Scrolls. (Offered on alternate years.)

202-3 Literature and Religion of the New Testament. Introduction to the literature, history, and religion of early Christianity.

220-3 The Religious Heritage of the East. A general introduction to the religious heritage of the East manifested in the beliefs, values, symbols, practices, and institutions of Hinduism, Buddhism, Confucianism, Taoism, and Shintoism. (Offered on an irregular schedule).

290-3 Current Problems. Investigation and discussion of a single current problem in the field of religion. Topics selected each quarter by the department. (May be taken more than once.)

300-3 Technology and Society. (Taught jointly with the Department of Engineering; see EGR 300.) A study of important developments in engineering and technology and their interrelations with society

and human values. Significant historical events in technology will be investigated and their beneficial and adverse social consequences will be analyzed. The course culminates in a study of contemporary technological developments and an assessment of their possible impacts upon society. Open to junior level students in all colleges.

307-3 **The Development of Jewish Thought.** The formation of Jewish thought after the close of the biblical period is traced from the Talmudic age through Philo and representative medieval thinkers down to the molders of contemporary Jewish philosophy. Prerequisite: consent of instructor. (Offered on alternate years.)

310-3, 311-3, 312-3 **History of Western Religious Thought.** Historical survey of the intellectual development in Western religion. Selected readings in important thinkers and in comprehensive secondary works. Prerequisite: consent of instructor. (Offered on an irregular schedule.)

321-3 **Sociology of Religion.** (Offered jointly with the Department of Sociology: see SOC 321). A general treatment of religion, examining the influence of religious ideas and institutions on other social institutions and the influence of society upon religion. Prerequisite: introductory courses in both religion and sociology and consent of instructor.

341-3 **Islam.** A study of the origin and development of Islam including contemporary issues and problems. Prerequisite: junior or senior standing or consent of instructor. (Offered on an irregular schedule.)

342-3 **Hinduism.** A study of the origin and development of Hinduism and its impact upon various aspects of Indian society and culture from the ancient times to the present day. Prerequisite: junior or senior standing or consent of instructor. (Offered on alternate years.)

343-3 **Buddhism and Asian Culture.** A study of Theravada Buddhism and Mahayana Buddhism in various Asian countries as they have been expressed in art, philosophy, social thought, and folk tradition. Prerequisite: junior or senior standing or consent of instructor. (Offered on alternate years.)

346-3 **Primitive Religions.** (Offered jointly with the Department of Sociology: see 346). An introduction to the anthropological approach to the meaning and function of religion in social life, and the nature of the thought or belief systems that give rise to the different forms of religious life — with special reference to the primitive and peasant societies. Prerequisite: introductory courses in both religion and anthropology and consent of instructor.

372-3 **Religion and Society.** A problem-centered study of major alternative religious approaches to society and of the principal views regarding the relation between religion and society.

375-3, 376-3 **A History of Christian Ethics. 375:** An examination of representative approaches to the ethics which have appeared in the history of the Christian community from the New Testament period to 1850. Special attention will be given to the relation of theological ideas to conceptions of political, family, economic, and social life. **376:** The issues raised in the preceding course will be examined in the ethical thought of representative theologians from the Social Gospel to the present. Recurring themes, such as the categories of "Love" and "Justice," and certain current theoretical issues, such as the function of norm and context in moral deliberation, will be organizing principles for analyzing the writings of these men. Prerequisite: consent of instructor.

391-3 **Religions and Geography of India.** (Offered jointly with the Department of Geography; see also GEO 391-3) The study of Hindu religious thought, its origins and geographical diffusion, and the role of Hindu thought in the spatial organization and expression of Indian culture, both historically and currently.

392-3 Philosophy of Religion. (Offered jointly with the Department of Philosophy: see PHL 392.) A critical examination of selected philosophical issues that arise from the cross-cultural studies of historic and secular religions as well as from the inter-disciplinary studies of religion such as the psychology, sociology, and anthropology of religion. Prerequisite: junior or senior standing or consent of instructor. (Offered on alternate years).

400-3 Seminar in Religion. Topics chosen by the department. Prerequisite: consent of instructor. (May be taken more than once.)

417-3 Evolution. (Taught jointly with the Department of Biology: see BIO 417). An introduction to the biological, philosophical, theological, and ethical aspects of the concept of evolution. Prerequisite: consent of instructor.

421-3 Contemporary Western Religious Thought. A study of major schools and selected figures in contemporary western religious thought. Prerequisite: consent of instructor. (Offered on alternate years.)

422-3 Contemporary Eastern Religious Thought. A study of major schools and selected figures in contemporary eastern religious thought. Prerequisite: consent of instructor. (Offered on alternate years.)

430-3 Teaching About Religion in the Public Schools. (Taught jointly with the College of Education; see ED 430.) An introduction to the historical background and court decisions pertaining to teaching about religion in the public schools; current ways in which religion is taught in the public schools; and new experimental approaches to teaching about religion.

444-3 Religions in China. A study of three major religions, i.e., Confucianism, Taoism, and Buddhism in China, with respect to their origins, historical developments, impact upon society, culture, and present issues. Prerequisite: junior or senior standing or consent of instructor. (Offered on an irregular schedule.)

445-3 Religions in Japan. A study of Japanese religious traditions such as Shintoism, Confucianism, Buddhism, which have played important roles in the life of the Japanese people. Prerequisite: junior or senior standing or consent of instructor. (Offered on irregular schedule.)

450-1 to 3, 451-1 to 3, 452-1 to 3 Undergraduate Research in Religion. Intensive consideration of problems and issues in a given area of the study of religion to be determined in consultation between student and department. Pass/Unsatisfactory grading used at discretion of the department.

453-3 The Age of Renaissance. (Taught jointly with the Department of History; see also HST 453-3) The examination of the decline of feudalism and manorialism and the rise of the nation state from 1350 to 1500, with special emphasis upon the revival of culture and the arts and the decline of the universal church.

454-3 The Age of Reformation. (Taught jointly with the Department of History; see also HST 454-3) The examination of the social, economic, and political roots of the Reformation, the Reform movement itself, and the impact which it had upon European life, thought and politics.

460-4 The Religious Quest in Contemporary Literature. (Taught jointly with the Department of English: see ENG 460.) An examination of the explicit and implicit religious and ethical positions which are found in the works of selected contemporary authors, e.g., Baldwin, Böll, Beckett, Camus, Faulkner, Salinger, Sartre, Updike, and Wiezel; and an introduction to various critical approaches to literature. Prerequisite: consent of instructor.

461-3 Varieties of Unbelief. A critical examination of contemporary

secular faiths such as agnosticism, naturalistic humanism, Marxist atheism, and existentialist nihilism, psychedelic movement, etc. (Offered on alternate years.)

464-3 to 4 Existentialism. (Offered jointly with the Department of Philosophy; see PHL 464.) Representative writers of the existentialist movement. Prerequisite: junior standing or permission of the instructor.

470-1 to 6 Workshop. An intensive study of selected problems, e.g. The Teaching of Religion in Secondary Schools, Medical Ethics, etc., to meet the particular needs of the participating students. (Specific subtitles to be announced for each particular workshop.) May be repeated subject to maximum limits established by student's department. Prerequisite: junior or senior standing or consent of instructor. Pass/Unsatisfactory grade only.

471-3 History of Religion in America. (Taught jointly with the Department of History; see also HST 471.) Survey of the development of religious thought and institutional life in the United States as viewed in the context of growth of American culture. Offered alternate years.

476-3, 477-3 Contemporary Religious Ethics. An examination of some of the major issues and problems in contemporary religious ethics; 476: Western, and 477: Eastern. Prerequisite: consent of instructor. (Offered on an irregular schedule.)

481-1 to 5, 482-1 to 5, 483-1 to 5 Independent Reading. Generally restricted to juniors and seniors. A written proposal by each student, with a faculty approval, is required for acceptance in this course.

495-3 Ethics in an Industrial Society: The Responsibility of Business in Society. (Taught jointly with the Department of Business: see BUS 695.) An investigation of the ethical responsibilities of business in light of political, moral, social, and religious considerations. Emphasis will be placed on the analysis and evaluation of the changing framework of responsibilities facing both business organizations and their leaders.

Graduate Courses

500-3 Technology and Society.

600-3 Seminar in Religion.

617-3 Evolution.

621-3 Contemporary Western Religious Thought.

622-3 Contemporary Eastern Religious Thought.

630-3 Teaching About Religion in the Public Schools.

641-3 Islam.

642-3 Hinduism.

643-3 Buddhism and Asian Culture.

653-3 The Age of Renaissance.

654-3 The Age of Reformation.

660-4 The Religious Quest in Contemporary Literature.

661-3 Varieties of Unbelief.

664-3 to 4 Existentialism.

670-1 to 6 Workshop.

671-3 History of Religion in America.

691-3 Religions and Geography of India.

695-3 Ethics in an Industrial Society: The Responsibility of Business in Society.

701-2 to 4, 702-2 to 4, 703-2 to 4 Reading and Research in Religion.

Honors Program in Religion: available for junior and senior religion majors and students with an adequate background in religion who

achieve accumulative 3.0 grade point average. For further details contact the chairman of the department.

Russian (RUS)

See Modern Languages.

Secretarial Studies

See Office Administration.

Sociology, Anthropology, and Social Work

Sociology (SOC)

111-3, 112-3 Introduction to Sociology I, II. Principles and problems of normal social life. Must be taken in sequence.

SOC 111 and 112 are prerequisite to all other sociology courses.

200-3 Social Problems. Definition, extent, and prevention of selected social problems in the United States.

210-3 Courtship and Marriage. Analysis of United States family behavior, stressing courtship, marriage, child-rearing, and marital tension.

220-3 Demography. Population theory, characteristics, migration, vital rates, growth, and policies.

230-3 Urban Sociology. Ecological analysis of urban life; special reference to large cities in the United States.

300-3 Industrial Sociology. Cross-cultural analysis of industrialization; organization of relationships within industrial social groups.

310-3 Sociology of the Family. Sociological analysis of development of the family, its relationship to society, and its contribution to personality.

315-3 Sociology of Education. The school as a social institution, school-community relations, social control of education, and structure of school society.

321-3 Sociology of Religion. (Offered jointly with the Department of Religion). A general treatment of major sociological theories of religion, examination of the influence of religious ideas and institutions on other social institutions, and the influence of society upon religion. Prerequisite: introductory courses in both sociology and religion and consent of instructor.

330-3 Criminology. A survey of crime, some causal theories, and attempts at prevention in the United States.

332-3 Juvenile Delinquency. Problems of definition and treatment of delinquency and preparation for further study or work with the delinquent child.

335-3 Minority Relations. Description and analysis of their emergence and trends in modern times.

390-2 to 4 Directed Readings in Sociology.

400-5 History of Sociological Thought. A historical study of the emergence and development of sociological thought from the time of Adam Smith and Comte to the twentieth century, with emphasis upon the basic writings of Adam Smith, Comte, Spencer, Marx,

Durkheim, Weber, and Simmel. Prerequisites: 9 hrs. of sociology.

404-3 Theories in Criminology. Concentration on development of theory over the past century. Main purpose is to prepare students for graduate study in criminology. Prerequisite: SOC 330, 332, and consent of instructor.

406-5 Methods of Sociological Inquiry. An examination of theoretical, philosophical, and practical issues of sociological investigation. The study of statistical and sampling procedures related to sociological sources of data.

411-3 Social Conflict. Historical sociological description and analysis of conflict theories.

415-3 Social Organization. Causes and theories of equilibrium and disequilibrium.

425-3 Community Studies. Explanation of various types of communities in America and the major sociological theories concerning the community.

490-3 Independent Research in Sociology.

Anthropology (ANTH)

140-3 Cultural Anthropology. A study of the history of cultural development in various parts of the world, with discussions of the different ways of life of contemporary peoples and the relationship between primitive and contemporary cultures.

141-3 Physical Anthropology. A study of the physical nature of man, including evolution, our relationship to primates, and the present-day physical variability of man.

142-3 Archaeology. A study of the methods of reconstructing the cultural history of prehistoric peoples.

240-3 to 4 Indians of North America. Culture areas and cross-cultural characteristics of the North American Indian. Prerequisites: ANTH 140, and 141 or 142.

260-3 Introduction to North American Archaeology. A survey of the archaeological cultures of North America, with emphasis on the Ohio Valley. Prerequisites: ANTH 140 and 142.

323-3 to 4 South American Cultures. Descriptive survey of contemporary South American societies and their cultural history. Prerequisites: ANTH 140, and 141 or 142.

333-3 Urban Anthropology. An analysis of the hypotheses, explanations, problems, and processes of urbanization in the United States and Africa and Latin America. Prerequisite: ANTH 140, and 3 additional hours in anthropology or sociology.

345-3 to 4 Social Anthropology. Comparative analysis of aboriginal and modern social structures. Prerequisite: 9 hrs. of anthropology.

346-3 Primitive Religion. (Offered jointly with the Department of Religion.) An introduction to the anthropological approach to the meaning and function of religion in social life, and nature of the thought or belief systems that give rise to the different forms of religious life — with special reference to the primitive and peasant societies. Prerequisite: introductory courses in both anthropology and religion and consent of instructor.

349-3 Anthropological Linguistics. An introduction to the science of language as an anthropologist's tool for field research. The description of language as sound, how to write an unwritten language, and how the anthropologist can make use of linguistic training for acquiring cultural data. Prerequisite: consent of instructor.

350-4 Laboratory of the Human Skeleton. Identification of human bones and investigation of their functions. Prerequisite: consent of instructor.

351-3 to 4 **Fossil Evidence for Human Evolution.** History, description, and interpretation of fossil man discoveries. Prerequisite: consent of instructor.

360-3 **Introduction to Old World Archaeology.** A survey of archaeology cultures of Europe, Africa, and Western Asia during the paleolithic, mesolithic, and neolithic periods. Prerequisite: ANTH 140, 142.

368-3 **Archaeological Field Techniques.** Classroom and laboratory preparation for archaeological excavations. Prerequisite: consent of instructor.

369-3 **Archaeological Field Study.** Excavation training on prehistoric sites. Summer only. Prerequisite: consent of instructor.

440-3 **Black Urban Culture.** Cultural uniqueness and education of the Black American. Will be geared to the inner-city educator, students preparing for urban teaching, and departmental majors. Prerequisite: senior standing.

442-3 to 4 **Appalachian Culture.** To familiarize departmental majors, educators, and education students with Appalachian culture and education of the Appalachian child. Prerequisite: senior standing.

444-3 **Intercultural Relations.** A seminar in the development of cultural awareness as preparation for working abroad. Prerequisite: consent of instructor.

446-3 **Cultures of South Asia.** Survey and analysis of cultural diversity and unity in the south of the continent of Asia, particularly of India, Pakistan, and Ceylon. Prerequisite: ANTH 140, and 141 or 142, and senior standing.

447-3 **African Ethnology.** Survey of the peoples and socio-cultural systems of Africa with special emphasis on sub-Saharan ecological and biocultural relationships. Prerequisite: ANTH 140 and 141 or 142.

448-3 **Development of Ethnological Thought.** This course is designed to survey the development of ethnological thought throughout the history of anthropology with special reference to the theories of social and cultural change. Prerequisite: senior standing and consent of instructor.

429-3 to 6 **Independent Research in Anthropology.**

Graduate Courses

635-3 **Laboratory in Group Processes.**

650-3 **Cultures of South Asia.**

675-3 **Development of Ethnological Thought and Theories of Social & Cultural Change.**

Social Work (SW)

SOC 111 and 112 are prerequisite to all social work courses.

275-3 **Social Welfare as a Social Institution.** Understanding of social welfare as a social institution. Evaluation of the impact of social welfare policies and programs for individual well-being and human welfare.

385-3 **Social Work.** History, principles, and survey of modern social work.

386-3 **Social Work Processes.** Analysis of fields, theories, and techniques. Prerequisite: SOC 385 or consent of instructor.

387-3 **Interventive Methods.** Theory and practice with emphasis upon psychosocial diagnoses. Prerequisite: SOC 385 or 386.

471-3 **Community Welfare Organization.** Methods for recognizing and meeting the social welfare needs of communities.

476-3 Social Group Work. Principles, concepts, and practices of modern group work. Records of actual experiences used as illustrative material.

478-3 Group Dynamics and Laboratory I. Application of theory and dynamic principles.

479-3 Group Dynamics and Laboratory II. Application of theory and dynamic principles.

485-3 to 4, 486-3 to 4, 487-3 to 4 Practicum in Social Work I, II, III. Application of theory in agency settings. Personal conferences which point direction and evaluation by agency staff and faculty. Prerequisite: consent of instructor. Up to eighteen hours may be taken in the practicum, but no more than four hours in any one quarter. Must be arranged with instructor.

494-3 to 6 Independent Research in Social Work.

GRADUATE COURSES

551-3 Seminar in Advanced Methods of Social Work.

Spanish

See Modern Languages.

Speech and Theatre

Speech Communication (SPC)

111-3 Oral Reading of Prose. Prerequisites: none.

112-3 Oral Reading of Poetry. Prerequisites: none.

121-2 Voice and Articulation. Introductory study of the principles of voice and articulation. Designed to raise levels of adequacy from substandard to that considered acceptable for college graduates. Prerequisites: none.

125-3 Speech Development and Disorders. Lectures on development of speech and speech disorders, *especially for elementary education majors*. Not credited for certification in a speech and hearing major. Secondary speech education majors should take SPC 127. Prerequisites: none.

126-3 Fundamentals of Communication for Elementary Teachers. Principles and practice of oral communication in discussion, reading aloud, story-telling, and public speaking. *Open to elementary majors only*. Prerequisites: none.

127-3 Introduction to Speech Disorders. Development of normal speech; disorders of speech; special problems of speech handicapped; speech therapy and the therapist. Required for those expecting to become speech and hearing therapists; recommended for secondary education majors. Prerequisites: none.

128-3 Phonetics. Speech sounds of the English language; phonetic alphabet; introduction to dialects. Required for those expecting to major in speech and hearing therapy. Strongly recommended for all speech and theatre majors. Prerequisites: none.

130-1 Introduction to Forensic Activities. Supervised activity in the various forms of beginning competitive oral discourse including debate, original oratory, extemporaneous speaking, oral interpretation (prose, poetry, and drama), after-dinner speaking, speaker's bureau, and discussion. Research, practice, and participation in forensic activities will be stressed. May be repeated to a maximum of four credit hours.

131-3 Discussion Methods. Theory and practice in small group communication with projects in definition, analysis, research, organization, logical processes, and leadership. Recommended for business and professional students and prospective teachers. Prerequisites: none.

133-3 Fundamentals of Parliamentary Procedure. Theory and practice in parliamentary procedure including the creation of a class organization and the construction of a constitution. Practice in framing and debating proposals will also be stressed. No prerequisites.

135-3, 136-3 Essentials of Public Speaking. Basic course of the department required of all general speech and theatre and speech education majors; pertinent to speech and hearing majors and secondary education majors. *Must be taken in sequence.* **135: Speaker:** Fundamentals of verbal and nonverbal communication in platform speaking. Discussion and practice in vocal and physical delivery and in purposeful development and organization of a speech. Prerequisites: none. **136: Message:** Emphasis on preparation of contents — audience analysis, choice of purpose, research of subject, organization of material, amplification and support of topic. Refinement of vocal and physical delivery. Prerequisite: SPC 135.

143-3 Fundamentals of Radio Broadcasting. Basic principles of radio broadcasting, use of equipment, and effective radio speaking. Prerequisites: none.

ADVANCED COURSES

221-3 Advanced Voice and Articulation. Development of heightened speech effectiveness for students planning work in professions requiring special speech skills (acting, radio, TV, etc.). Prerequisite: SPC 128. Offered alternate years.

223-3 Physiology of Speech. Anatomical, physiological, and neurological bases of speaking. Required for those expecting to major in speech and hearing therapy. Prerequisite: SPC 127, 128. Offered alternate years with SPC 127.

232-3 Argumentation: Principles and Practice. Projects in analysis, research, briefing, ordering of arguments and evidence, refutation, audience evaluation, argumentative composition, and delivery. Recommended for prospective lawyers, business and professional students, and teachers of speech. Prerequisites: SPC 135 or permission of instructor.

233-3 (formerly 137-3) Persuasion: Theory and Practice. Delineation of the concept of persuasion. Survey of classical theory and behavioral research and theory. Experience in preparation and presentation of persuasive communication. Prerequisite: SPC 135.

330-1 Advanced Forensic Activities. Supervised activity in the various forms of advanced competitive oral discourse. Research, practice, and participation in tournaments, forums, symposia, and exhibition speaking. Events include debate, original theory, extemporaneous speaking, oral interpretation of prose, poetry, and drama, after-dinner speaking, discussion, and speaker's bureau. May be repeated for a maximum of four credit hours.

331-3 Speech Composition. Principles of rhetorical criticism, ultimate goals, and the philosophy of rhetoric. A consideration of standards of judgment, the structure of oral discourse and measures of effectiveness from classical to contemporary times. Prerequisites: SPC 135, junior standing.

332-3 Forms of Interpersonal Communication. A consideration of interpersonal communication with special emphasis on the psychology of the speaker and the listener. Prerequisite: SPC 331 or permission of the instructor.

Secondary Speech and Drama: Curriculum and Materials. See ED 333-3.

334-3 The Rhetoric of Agitation and Control. The role of rhetoric in understanding social movements showing how men use symbolic behavior to influence other men and events. Historical movements will be analyzed to determine the discursive and nondiscursive communication used to bring about social changes and to direct and maintain existing regulatory agencies. Prerequisite: junior standing. *Open to non-majors.*

335-3 History of Rhetoric I. A survey of rhetorical theory in the Greek and Roman world. Primary attention will be paid to the relevant works of Plato, Aristotle, Isocrates, Cicero, and Quintilian. Prerequisite: SPC 135 or permission of instructor.

336-3 History of Rhetoric II. A survey of rhetorical theory from the Middle Ages to the nineteenth century. Primary attention will be paid to the works of Erasmus, Wilson, Bacon, Ramus, Fenelon, and their principal contemporaries.

337-3 History of Rhetoric III. A survey of modern and contemporary rhetoric including works of Campbell, Blair, Whately, Burke, Richards, and McLuhan.

341-3 Ethics in Communication. Historical and contemporary perspectives on the application of ethics to the various forms of communication in a free society.

421-3 Speech and Language Development. The development of speech and language in the preschool years. Prerequisites: SPC 125 or 127 and junior standing.

451-3 Survey of Communication Research. Provides students with a basic knowledge of the behavioral approach and of the current theories and experiments being conducted in communications research.

481-2 Independent Reading. Departmental honors program. By arrangement with instructor only.

GRADUATE COURSES

621-3 Speech and Language Development.

Theatre (TH)

101-3 The Arts of the Theatre. Designed to develop an understanding and appreciation of drama and the theatre. A critical analysis of the theatre as an art form, including consideration of the functions of the playwright, actor, director, critics, designer, and theatre architect.

102-3 Introduction to Technical Theatre. A general survey of the technical aspects of theatre including its personnel and organization. Laboratory hours to be arranged.

108-3 The Voice in Performance. Training in the requirements of good voice in the theatre, projection through breath control, support of tone, resonance, voice placement, articulation, and the element of tone. Practice in dialects for the stage.

110-1 Theatre Arts Activities. Participation in technical play production activities of University Theatre sponsored productions; specific assignments determined at initial meeting. 35 hours minimum participation time plus major crew assignment or equivalent required. May be repeated for a maximum of six hours credit.

120-2 Makeup for the Theatre. A lecture-laboratory course in the theory and practice of stage makeup. Participation in departmental productions. Prerequisite: TH 101.

140-3 Stage Movement. Fundamental work in developing the body as an acting instrument; acquisition of strength, flexibility, relaxation, and control. Two-hour lecture and two-hour laboratory.

144-3 (formerly 201-3) Acting: Improvisation. Emotional and expressive freedom for acting through improvisational theatre tech-

niques. Exercises in developing the sense memories and in their pantomimic recall; exercises to heighten the actor's observations, imagination, and creative powers. Two-hour lecture-recitation and two-hour laboratory.

203-3 Contemporary Theatre. A critical study of the contemporary theatre and its standards and production methods. Attendance at several current productions is required. Laboratory fee for theatre tickets. Prerequisite: TH 101.

220-3 (formerly 205-3) Stagecraft. Introduction to the theory and practice of sceneography and a study of the materials and techniques of executing stage scenery. The course involves practice in the construction and mounting of a production. Laboratory hours to be arranged. Prerequisite: TH 102.

244-3 (formerly 202-3) Acting: Characterization. The techniques and methods of interpretation and projecting a role through study and performance. Sensory responsiveness and the application of experience to characterization. Two-hour lecture and two-hour laboratory. Prerequisite: TH 140, 144.

311-3 Oral Reading of Drama. Analysis and practice in reading from plays and dramatic poetry; reader's theatre; performance. Prerequisites: SPC 112, 201.

320-3 (formerly 206-3) Stage Lighting. Theories, equipment, and techniques of stage lighting and lighting design. Practice in lighting a production. Laboratory hours to be arranged. Prerequisite: TH 220.

324-3 (formerly 207-3) Scene Design. Introduction to the art of scene design. Contemporary scene designers in Europe and America; assigned reading and criticism of weekly sketch problems. The ground plan and the designer's sketch. Prerequisite: TH 320.

328-3 Costume Design. The theory and practice of costume design and the application of costume design principles to stage productions. Prerequisite: TH 101.

344-3 Acting: Styles. The technique of acting in major nonrealistic styles through scene study and performance. Lab hours to be arranged. Prerequisite: TH 108, 244.

350-4 (formerly 301-3) Directing. Problems of script selection and interpretation, casting, rehearsing, and performance. Techniques of composition, movement, and business for the proscenium stage and open stage. Preparation of the prompt book. Prerequisite: SPC 201.

352-3 (formerly 302-3) Directing Laboratory. The presentation of a one-act play in the studio theatre for departmental and public audiences. Prerequisite: TH 350.

360-3 History of the Theatre I. Primitive theatre through the medieval. (Formerly listed as 314-3.)

361-3 History of the Theatre II. Elizabethan through 18th-century theatre. (Formerly listed as 314-3.)

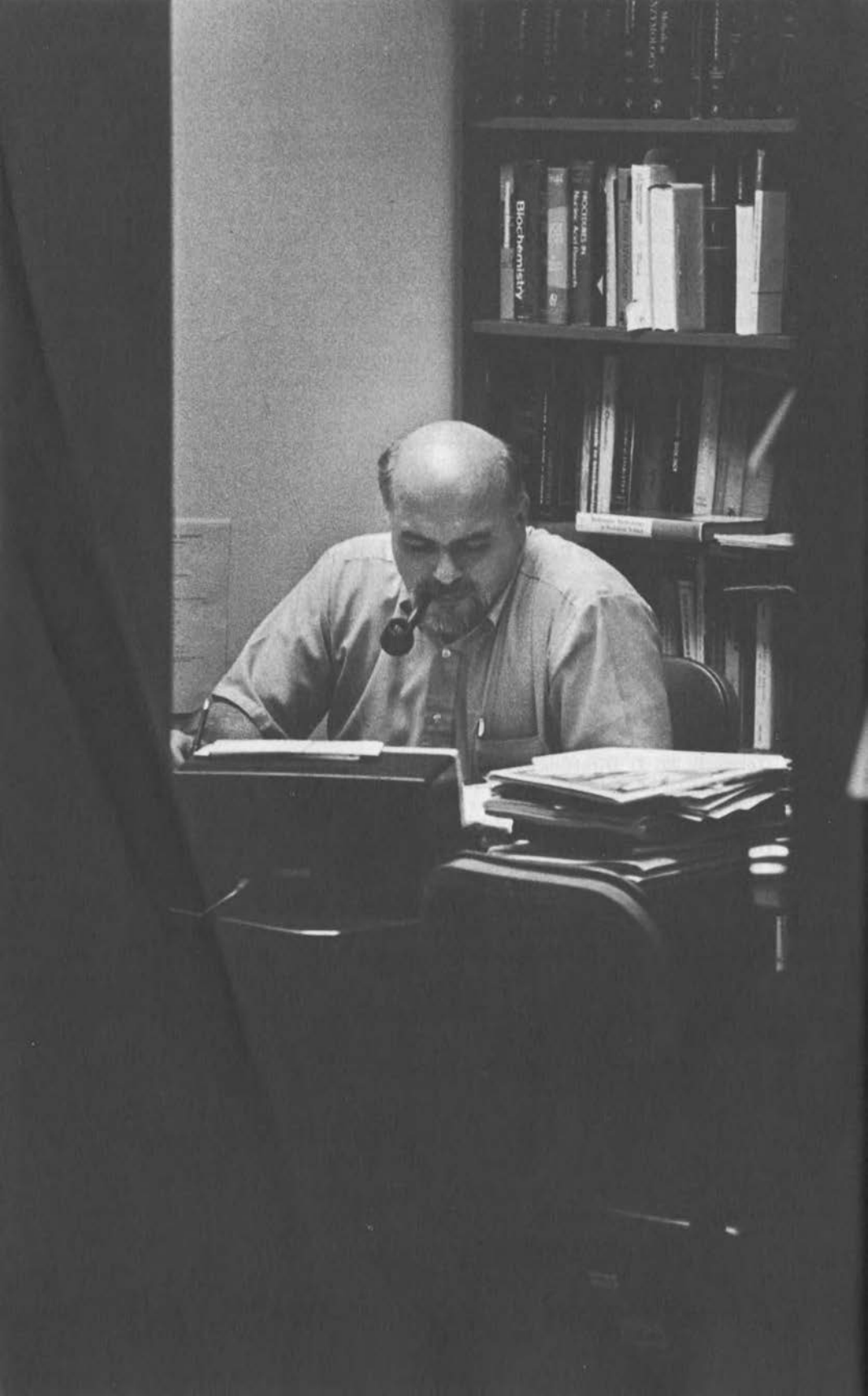
362-3 History of the Theatre III. From the 18th century to the present. (Formerly listed as 316-3.)

365-3 Theory and Criticism. Changing concepts of dramatic structure and criticism through a comparative examination of works of selected playwrights and critics. The chief theories of dramatic production in relation to aesthetic principles.

370-3 Creative Dramatics. A study of the nature of creativity in children and the techniques through which are developed sensitivity, bodily freedom, characterization, and impression.

390-1 to 3 (formerly 401-3) Projects in Theatre. Advanced work on an individual basis required of all theatre majors. The student prospectus is subject to approval of the department by the end of the quarter preceding the registration.

491-3 (formerly 402-3) Seminar in Theatre. Selected topics in theatre. Prerequisite: permission of instructor.


Biochemistry

Faculty and Administrative Officers

Faculty

Information contained in this section of the Bulletin is up to date as of February 1, 1972. Faculty are listed by college, by department, and by rank within the individual departments; for alphabetical listing, see name index.

President: Brage Golding
Provost: Andrew P. Spiegel

College of Business and Administration

Dean: John V. Murray
Assistant Deans: William D. Evans
Rust F. Gray, Jr.
Academic Adviser: Ruth L. Bell

DEPARTMENT OF ACCOUNTANCY

Professor

Donald F. Pabst, *Chairman* (1967), B.B.A., Cincinnati, 1957; M.B.A., Ohio State, 1958; Ph.D., Ohio State, 1961; C.P.A., 1960.

Associate Professor

Dean S. Eiteman (1969), B.B.A., Univ. of Michigan, 1957; M.B.A., Univ. of Michigan, 1958; Ph.D., Michigan State, 1967.

Assistant Professors

Clarence E. Campbell (1971) B.S.B.A., Univ. of Tulsa, 1967; M.A., Univ. of Missouri, 1969.

Joseph F. Castellano (1971) B.S., St. Louis Univ., 1964; M.S., St. Louis Univ., 1965; Ph.D., St. Louis Univ., 1971.

Thomas G. Evans (1968), B.S., Pennsylvania State, 1965; M.B.A., Michigan State, 1966; Ph.D., Michigan State, 1969.

J. Larry Hagler (1971) B.S., Univ. of Texas, 1963; M.B.A., West Texas State Univ., 1965; C.P.A., 1968.

Gerald E. Keyes (1971) B.B.A., Univ. of Cincinnati, 1960; M.B.A., Ohio State Univ., 1961; C.P.A., 1966.

Harper A. Roehm (1966), B.A., De Pauw, 1957; M.B.A., Indiana, 1963; C.P.A., 1964.

Jerry Throckmorton (1965), B.S., Miami, 1957; M.B.A., Miami, 1965; C.P.A., 1968.

Philip H. Vorherr (1970), B.B.A., Cincinnati, 1964; M.B.A., Cincinnati, 1965; C.P.A., 1966.

Instructor

Charles M. Rohr (1971) *Celina.* B.B.A., Univ. of Cincinnati, 1968; M.B.A., Univ. of Cincinnati, 1971. C.P.A., 1971.

DEPARTMENT OF ADMINISTRATIVE SCIENCES AND FINANCE

Professors

Robert Dolphin, Jr., *Chairman* (1967) B.S., Indiana Univ., 1960; M.B.A., Indiana Univ., 1961; D.B.A., Michigan State Univ., 1964.

Associate Professors

Khurshid Ahmad (1970) B.A., Univ. of Karachi, 1953; M.A., Univ. of Punjab, 1955; Ph.D., Univ. of Pennsylvania, 1970.

Peter W. Bacon (1969) B.A., Albion College, 1962; M.B.A., Indiana Univ., 1964; D.B.A., Indiana Univ., 1967.

Myron K. Cox (1969) B.S., Virginia Polytechnic Inst., 1949; B.S., Pennsylvania State Univ., 1952; M.Sc., Massachusetts Inst. of Technology, 1957; E.E., North Carolina State College, 1963; D.Sci., College of Applied Science, London, England, 1964.

Edgar H. Hemmer (1971) B.S., U.S. Naval Academy, 1946; B.S.A.E., U.S. Naval Postgraduate School, 1954; M.S.I.E., Purdue Univ., 1955; M.S., 1969; Ph.D., 1971.

William J. McGrath (1971) B.B.A., Univ. of Cincinnati, 1951; M.B.A., Xavier Univ., 1956; J.D., Univ. of Cincinnati, 1961.

Rita S. Tilton (1967) B.A., Univ. of Tulsa, 1954; M.A., Teachers College, Columbia Univ., 1962; Ph.D., Univ. of Minnesota, 1967.

Assistant Professors

Robert T. Amsden (1971) B.A., Univ. of New Hampshire, 1960; M.S., Rutgers Univ., 1964; Ph.D., 1969.

Michael J. Cleary (1971) B.S., Norwich Univ., 1961; M.A., Univ. of Nebraska, 1969, Ph.D., 1971.

William D. Evans (1964), B.S.Ed., Youngstown State Univ., 1956; M.Ed., Miami Univ., 1964.

Rust F. Gray, Jr. (1969) B.A., Depauw Univ., 1960; M.B.A., Miami Univ., 1963; Ph.D., Univ. of Illinois, 1969.

Robert W. Haessler (1971) B.S., Univ. of Michigan, 1962; M.S., Univ. of Michigan, 1963; M.B.A., Univ. of Michigan, 1964; Ph.D., Univ. of Michigan, 1968.

Charles J. Hartmann (1970) A.B., Washington Univ., 1959; J.D., Missouri, 1966; Missouri Bar, 1966.

Andrew W. Lai (1967) B.A., Chung Hsing Univ., 1961; M.A., Univ. of Alabama, 1964.

Roger J. Stauffer (1969) *Celina.* B.S., Ball State, 1937; M.A., Columbia, 1942.

Instructor

Robert A. Wagley (1969) B.S., Ball State Univ., 1962; M.B.A., Ball State Univ., 1963.

DEPARTMENT OF ECONOMICS

Professor

Norman S. Anon (1966) A.B., Miami, 1948; M.S., Wisconsin, 1951; Ph.D., 1954.

Associate Professors

Charles H. Blake, Jr. (1967) B.S., Linfield, 1949; M.S., Wisconsin, 1953; Ph.D., 1966.

Joseph T. Chao, *Acting Chairman* (1967) B.A., Catholic Univ. of Peiping, 1947; M.S., Southern Illinois, 1958; Ph.D., New York Univ., 1968.
John C. Chitwood, Jr. (1970) B.A., Univ. of Texas, 1956; M.A., 1956.
John C. Pool (1969) B.A., Missouri, 1962; M.B.A., 1964; Ph.D., Colorado, 1967.
John J. Treacy (1967) B.S., South Carolina, 1957; Ph.D., Tulane, 1963.

Assistant Professors

Lloyd W. Frueh, II (1965) A.B., Miami, 1958; M.A., 1961.
Paul B. Miller (1969) B.S., Southern Illinois, 1959.
Steve M. Renas (1971) A.B., Georgia State Univ., 1968; M.A., Georgia State Univ., 1969; Ph.D., Georgia State Univ., 1971.
Jack H. Stone (1969) B.A., Cincinnati, 1962; M.A., Cincinnati, 1963.

Instructors

Ralph L. Germer (1969) B.S., Ohio State, 1961; M.Ed., Wright State, 1968.

DEPARTMENT OF MANAGEMENT

Professors

J. Eugene Kangas (1970) B.B.A., Univ. of Detroit, 1957; M.B.A. Univ. of Detroit, 1959; Ph.D., Univ. of Cincinnati, 1965.
Arthur C. MacKinney (1971) B.A., William Jewell College, 1951; M.A., Minnesota, 1953; Ph.D., 1955.

Associate Professors

Horace W. Lanford, Jr. (1966) B.B.A., Georgia, 1948; M.A., George Washington, 1950; Ph.D., Ohio State, 1964.
John V. Murray (1967) B.G.E., Omaha, 1954; M.S., Colorado, 1957; D.B.A., 1967.
Edward A. Nicholson (1971) B.S., Ohio State Univ., 1963; M.A., 1966; Ph.D., 1970.
Clyde C. Schrickel (1966) A.B., Hanover, 1949; M.B.A., Xavier, 1959; Ph.D., Ohio State, 1966.
Thomas Von der Embse (1970) B.S., University of Dayton, 1960; M.B.A., Indiana Univ., 1961; Ph.D., Ohio State, 1968.

Assistant Professors

Gordon K. Constable (1971) B.S., Purdue Univ., 1966; M.S., 1968.
Louis V. Imundo (1971) B.S.I.E., Long Island Univ., 1964; M.B.A., Adelphi Univ., 1966; D.B.A., Univ. of Oklahoma, 1971.
John F. Myron (1969) *Celina.* B.S., U.S. Military Academy, 1945; M.B.A., Harvard, 1954.
Herman A. Waggener, Jr., *Acting Chairman* (1969) B.A., Mississippi College, 1941; M.B.A., Wright State, 1969.

DEPARTMENT OF MARKETING

Professor

Robert J. Kegerreis (1969) B.A., Ohio State Univ., 1943; B.S., Ohio State Univ., 1943; M.B.A., Ohio State Univ., 1947; Ph.D., Ohio State Univ., 1968.

Associate Professor

Herbert E. Brown, *Chairman* (1967) B.S., Southern Illinois Univ., 1961; M.S., Southern Illinois Univ., 1962; Ph.D., Ohio State Univ., 1969.

Assistant Professors

M. Wayne Delozier (1971) B.S., Univ. of Richmond, 1967; Ph.D., Univ. of North Carolina, 1971.
Thomas D. Dovel (1970) B.S., Miami Univ., 1959; M.B.A., Miami Univ., 1961.
Dennis D. Garber (1971) B.S., Marietta College, 1964; M.B.A., Ohio State Univ., 1969.
Denis F. Healy (1970) B.S., Massachusetts Inst. of Technology, 1961; M.B.A., Ohio State Univ., 1968.

William E. Lieb (1971) B.S., St. Joseph's College, 1963; M.B.A., Indiana Univ., 1965.

Instructors

Paul Merenski (1972) B.S., Wright State Univ., 1971; M.B.A., Wright State Univ., 1972.

College of Education

Dean: F. Norwood Marquis
Associate Dean: Roger G. Iddings
Assistant Dean: James A. Dillehay
Record Analysts: Sally A. Evans
Catherine L. Stofer

ART EDUCATION

Associate Professor

Gary C. Barlow (1964) B.S., Miami Univ., 1957; M.Ed., Miami Univ., 1958; Ed.D., Pennsylvania St. Univ., 1967.

Instructors

Shelby Crowe (1970) A.B., Eastern Kentucky Univ., 1958; M.Ed., Miami Univ., 1961.

Luisa Owen (1971) B.S., Wright State Univ., 1970; M.Ed., Wright State Univ., 1971.

Christopher L. Shatsby (1970) B.S., New Mexico Western Univ., 1957; M.Ed., New Mexico Western Univ., 1964.

Marcine Silver (1971) B.S., Univ. of Dayton, 1968; M.Ed., Wright State Univ., 1970.

James W. Vaughn (1970) B.S., Eastern Kentucky State College, 1958; M.Ed., Miami Univ., 1961.

EDUCATION

Professors

Mary Harbage (1967) B.A., Ohio State Univ., 1931; M.A., Ohio State Univ., 1949; Ed.D., Columbia, 1963.

Wesley Huckins (1968) B.S., Black Hills State College, 1953; M.A., Univ. of Wyoming, 1955; Ed.D., Univ. of Wyoming, 1963.

F. Norwood Marquis (1964) B.S., Central Missouri State College, 1937; M.Ed., Univ. of Missouri, 1945; Ed.D., Univ. of Missouri, 1952.

Robert P. Milheim *University Professor* (1964) B.S. in Ed., Pennsylvania St. Teachers College, 1939; M.A., Northwestern Univ., 1948; Ed.D., Northwestern Univ., 1955.

Harold Silverman (1966) A.B., Queens College, 1941; A.M. in Ed., Washington Univ., 1950; B.S. in S.S., Washington Univ., 1951; Ed.D., Wash. Univ., 1952.

Earl T. Zwetschke (1967) B.S. in Ed., Washington Univ., 1946; M.P.S., Univ. of Colorado, 1947; Ph.D., Univ. of Minnesota, 1953.

Adjunct Professor

Samuel G. Sava (1970) B.S., Slippery Rock St. College, 1953; M.S., Westminster College, 1955; Ed.D., American Univ., 1964.

Associate Professors

Madeline H. Apt (1966) B.S., Univ. of Pittsburgh, 1960; M.Ed., Univ. of Pittsburgh, 1962; Ph.D., Univ. of Pittsburgh, 1966.

Marlene Bireley (1969) B.S., Bowling Green St. Univ., 1957; M.A., Ohio State Univ., 1961; Ph.D., Ohio State Univ., 1966.

Beatrice F. Chait (1965) A.B., Hunter College, 1936; M.A., Univ. of Michigan, 1951.

Robert L. Clark (1968) B.S., Murray State College, 1949; M.A., Univ. of Kentucky, 1954; Ph.D., Southern Illinois Univ., 1965.

Robert D. Earl (1966) B.S., Bluffton College, 1954; M.A., Miami Univ., 1958; D.Ed., Oklahoma State, 1967.

Darold Engebretson (1971) B.D., Luther Theological Seminary, 1963; B.A., Univ. of Hawaii, 1966; M.Ed., Univ. of Hawaii, 1967; Ph.D., Univ. of Hawaii, 1969.
Hal Gaddis (1969) B.S., Ohio State Univ., 1949; M.A., Ohio St. Univ., 1953; Ph.D., Ohio State Univ., 1968.
Glenn T. Graham (1966) B.S., Univ. of Pittsburgh, 1962; M.A., Univ. of Pittsburgh, 1965; Ed.D., Univ. of Pitts., 1966.
Lilburn Hoehn (1969) B.S. in Ed., Univ. of Missouri, 1954; M.Ed., Univ. of Missouri, 1963; Ph.D., Michigan State Univ., 1967.
Roger G. Iddings (1964) A.B., Hanover College, 1952; M.Ed., Wayne State University, 1960; Ph.D., Ohio State University, 1966.
Rita A. Tilton (1967) B.S., Univ. of Tulsa, 1954; M.A., Teacher's College, Columbia Univ., 1962; Ph.D., Univ. of Minnesota, 1967.
James K. Uphoff (1967) B.A., Hastings College, 1959; M.Ed., Univ. of Nebraska, 1962; Ed.D., Univ. of Nebraska, 1967.
Eugene W. Wade (1964) A.B., Miami Univ., 1953; M.Ed., Miami Univ., 1958; Ed.D., Indiana Univ., 1960.

Assistant Professors

Henry B. Andrews, Jr. (1970) B.S., Univ. of Tennessee, 1966; Ed.D., Univ. of Tenn., 1970.
Dennis Badaczewski (1971) B.A., Northern Michigan Univ., 1966; M.A., Eastern Michigan Univ., 1969; Ed.D., Univ. of Kansas, 1971.
Carl V. Benner (1970) B.S., Rio Grande College, 1957; M.A., Univ. of Northern Iowa, 1960; M.S., Purdue Univ., 1960; Ed.S., Bowling Green St. Univ., 1965; Ph.D., Ohio State Univ., 1970.
Varon Campbell (1970) *Celina.* B.S., Berea, 1953; M.S., Kentucky, 1963; M.A., 1967.
James A. Dillehay (1969) B.S., Univ. of Dayton, 1957; M.Ed., Miami Univ., 1960; Ed.S., Bowling Green Univ., 1968; Ph.D., Bowling Green, 1969.
S. Joseph Emanuel, Jr. (1969) B.A., St. Meinrad College, 1953; M.A., St. Francis College, 1967; Ed.D., Indiana Univ., 1969.
Diane E. Frey (1970) B.S., Shippensburg State College, 1966; M.Ed., Univ. of Illinois, 1967; Ph.D., Univ. of Illinois, 1970.
Joseph A. Gatton (1969) *Piqua.* B.S., Miami, 1957; M.Ed., 1960.
Perry Hall (1970) A.B., Fairmont State College, 1957; M.S., West Virginia Univ., 1960.
Gilbert R. Hutchcraft (1970) A.B., Indiana Univ., 1963; M.S., Indiana Univ., 1969; Ed.D., Indiana Univ., 1970.
Bruce W. Lyon (1967) B.S., Northwestern Univ., 1962; M.A., 1964; Ph.D., Ohio State Univ., 1969.
Thomas J. Matczynski (1970) B.S., Univ. of Dayton, 1964; M.S., Univ. of Dayton, 1968; Ph.D., Ohio Univ., 1971.
Donald E. Richards (1968) A.B., Miami Univ., 1949; M.Ed., Univ. of Washington, 1952; Ph.D., Ohio State Univ., 1970.
Anne B. Shearer (1970) B.A., Howard Univ., 1958; M.A. Ed., Atlanta Univ., 1964; Ph.D., Ohio Univ., 1970.
Barbara Sperling (1970) *Celina.* B.S., Bowling Green, 1956; M.S. in Ed., Bowling Green, 1961. Ed. D., Ball State Univ., 1970.
Charles A. Starks (1971) B.A., Univ. of Northern Colorado, 1965; M.Ed., Univ. of Arizona, 1967; Ed.D., Ball State, 1971.
Ralph E. Stuckman (1969) *Celina.* B.S., Bowling Green, 1960; M.A. Toledo, 1963; Ed.D., Ball State, 1969.
Carlton Wall (1971) B.S., Belmont College, 1964; M.A., George Peabody College, 1965; Ph.D., Ohio State Univ., 1971.
Craig D. Willis (1970) B.A., Ohio Wesleyan, 1957; M.A., Ohio State, 1960; Ph.D., Ohio State, 1969.

Instructors

Diane Arthur (1971) B.S., Wittenberg Univ., 1959; M.S., Wright State Univ., 1971.
Harden P. Ballantine (1970) A.B., Franklin and Marshall College, 1961; Ed.M., Columbia Univ., 1967.

James Daiker (1971) B.A., Univ. of Cincinnati, 1958; M.Ed., Univ. of Cincinnati, 1966.
John Gadell (1968) A.B., Washington Univ., 1957; M.A.Ed., Washington Univ., 1965.
Sandra Gadell (1968) B.A., Univ. of Iowa, 1958; M.A., Univ. of Iowa, 1960.
Lois B. Hyman (1970) B.S., Hunter College, 1952; M.A., Hunter College, 1957.
Ruth H. King (1968) B.S., Wayne State Univ., 1958; M.A., New York Univ., 1967.
Elenore Koch (1967) B.S., Ohio Univ., 1951; M.S., Miami Univ., 1962.
Jeff Kunst (1971) B.S., Wittenberg Univ., 1967; M.S., Xavier, 1970.
Donald E. Richards (1968) A.B., Miami Univ., 1949; M.Ed., Univ. of Washington, 1951.
Carol E. Sedgwick (1970) B.S., Univ. of Cincinnati, 1944; M.Ed., Xavier Univ., 1966.
Alice K. Swinger (1971) B.S., Miami Univ., 1966; M.S., Wright State Univ., 1970.
Dorothy Winkeljohn (1971) *Celina.* B.S., St. Joseph, 1964; M.S., Syracuse Univ., 1969.
William B. Young (1970) *Celina.* B.S., Univ. of Omaha, 1961; M.S., Miami Univ., 1965.

PHYSICAL EDUCATION

Instructors
Kenneth Knight (1969) B.S. in Ed., Miami Univ., 1964; M.Ed., Miami Univ., 1966.
Clifford T. McPeak (1966) B.S. in Ed., Miami Univ., 1964; M.Ed., Miami Univ., 1965.

College of Liberal Arts

Dean: Eugene B. Cantelupe
Assistant Deans: O. Elizabeth Harden
Allan B. Spetter

DEPARTMENT OF ART

Assistant Professors
Kimmerly H. Kiser *Acting Chairman* (1969) B.F.A., Philadelphia College of Art, 1966; M.F.A., Indiana Univ., 1969.
Ernest F. Koerlin (1968) B.F.A., Minneapolis School of Art, 1961; M.F.A., Yale Univ., 1965.
Raymond L. Must (1967) B.A., Michigan State, 1950; M.A., Ohio State, 1951.
Instructors
Daniel Kadish (1969) B.A., New York Univ., 1964; B.F.A., Yale Univ., 1969; M.F.A., Yale Univ., 1969.
Mary F. Kulwicki (1969) B.A., Univ. of Dayton, 1966; M.A., Ohio State Univ., 1969.
Bernard McDonald (1970) B.F.A., School of the Art Inst. of Chicago, 1967; M.F.A., Southern Illinois Univ., 1970.

DEPARTMENT OF CLASSICS

Assistant Professors
Cynthia King (1965) B.A., Goucher, 1960; Ph.D., North Carolina, 1969.
William J. King (1964) *Acting Chairman.* A.B., North Carolina, 1960, Ph.D., North Carolina, 1970.
Eva Marie Stehle (1971) B.A., Univ. of Pennsylvania, 1966; Ph.D., Univ. of Cincinnati, 1971.

Professors

William D. Baker (1968) B.A., Hobart, 1946; M.A., Chicago, 1948; Ph.D., Northwestern, 1950.

Eugene B. Cantelupe (1971) B.A., Univ. of Buffalo, 1942; M.F.A., State Univ. of Iowa, 1950; Ph.D., Washington Univ., 1959.

Donald R. Swanson (1971) B.A., Washington & Jefferson College, 1953; M.A., Univ. of Connecticut, 1955; Ph.D., Rutgers Univ., 1965.

Thomas H. Wetmore (1969) A.B., Lincoln Memorial, 1934; M.A., Duke, 1940; Ph.D., Michigan, 1956.

Associate Professors

Georgiana Babb (1964) B.A., Ohio State Univ., 1943; M.A., Ohio State Univ., 1946; Ph.D., 1951.

Peter S. Bracher (1964) B.A., Wittenberg, 1954; M.A., Washington, 1956; Ph.D., Pennsylvania, 1966.

James J. Gleason *Chairman* (1966) B.S., Dayton, 1953; M.A., Ohio State, 1957; Ph.D, 1969.

Elizabeth Harden (1966) B.A., Western Kentucky State, 1956; M.A., Arkansas, 1958; Ph.D., 1965.

Lawrence E. Hussman (1965) B.A., Dayton, 1954; M.A., Michigan, 1957; Ed.D., 1964.

Thomas R. Whissen (1965) B.A., Kent State, 1955; M.A., Colorado, 1963; Ph.D., Cincinnati, 1969.

Assistant Professors

Cecile W. Cary (1967) B.A., Macalaster, 1959; M.A., Washington, 1963; Ph.D., 1969.

Norman R. Cary (1967) B.A., Asbury, 1958; M.A., Arkansas, 1960; Ph.D., Wayne State, 1968.

Robert M. Correale (1967) B.A., St. Bonaventure, 1955; M.A., Siena College, 1960.

Aloysius S. Gasior (1970) A.B., John Carroll, 1960; M.A., 1962; Ph.D., Illinois, 1970.

James M. Hughes (1964) B.A., Harvard, 1961; M.A., Pennsylvania, 1962; Ph.D., 1969.

Gary B. Pacernick (1969) B.A., Michigan, 1963; M.A., Minnesota, 1966; Ph.D., Arizona, 1969.

Robert A. Terrebone (1970) B.A., Concordia Senior College, 1963; M.A., Louisiana State, 1965; Ph.D., 1970.

John A. Zamonski (1970) Ph.B., Detroit, 1961; M.A., 1966; Ph.D., Ohio, 1970.

Instructors

Alice Alexander (1971) B.A., Wellesley College, 1932; B.S., Wittenberg Univ., 1934; M.A., Ohio State Univ., 1939.

Eleanor Bergholz (1971) A.A., North Park College, 1955; B.A., Purdue Univ., 1964; M.A., Univ. of Illinois, 1970.

Holly Castle (1971) B.A., Ohio State Univ., 1967; M.A., Ohio State Univ., 1969.

Dale C. Childers (1971) B.A., Univ. of Cincinnati, 1966; M.A., Ohio Univ., 1969.

Renee Crauder (1971) B.A., Douglass College, 1950; M.A., Central State Univ., 1967.

Robert A. Francis (1971) A.T., Univ. of Dayton, 1969; B.T., Univ. of Dayton, 1970; M.A., Univ. of Dayton, 1971.

Nairn A. Galvin (1971) B.A., McMaster Univ., 1966; M.A., McMaster Univ., 1969.

Carol J. Hagan (1969) *Celina.* B.A., Ohio Northern, 1966; M.A., Ball State, 1968.

Lyla R. Harden (1971) B.S.E., Univ. of Missouri, 1965; M.E., Univ. of Mississippi, 1970.

Carol S. Levine (1971) B.A., Univ. of Michigan, 1967; M.A., Univ. of Michigan, 1968.

Deborah McDavis (1971) B.A., Univ. of Dayton, 1969; M.A., Univ. of Dayton, 1971.

Arthur A. Molitierno (1969) *Piqua.* B.A., Villanova, 1964; M.A., Dayton, 1966.

Martin R. Motes (1971) *Celina.* B.A., Univ. of Miami, 1967; M.A., Univ. of Miami, 1968.

Robert S. Nevin (1968) A.B., Williams, 1930; M.A., Dayton, 1965.

Patricia Piety (1971) B.A., Southwestern Illinois Univ., 1967; M.A., Univ. of Dayton, 1970.

Catherine Rosenbaum (1971) B.S., Ohio State Univ., 1949; M.A., Wright State Univ., 1968.

Carol L. Snyder (1970) *Celina.* B.S., Ohio Northern, 1969; M.A., Bowling Green, 1970.

Nancy Sobal (1971) B.A., Wright State Univ., 1968; M.A., Miami Univ., 1970.

Nina D. Suru (1969) B.A., Southwestern Louisiana, 1966; M.A., Louisiana State, 1968.

Arline L. Tomlinson (1970) *Celina.* B.A., Ohio Northern, 1962; M.A., Dayton, 1970.

Janice Wilson (1971) B.A., Berea College, 1959; M.A., Miami Univ., 1964.

DEPARTMENT OF GEOGRAPHY

Adjunct Associate Professor

Roland D. Mower (1971) B.S., Univ. of Utah, 1955; M.S., Oklahoma State Univ., 1959; Ph.D., Univ. of Kansas, 1971.

Assistant Professors

John R. Ray, *Acting Chairman* (1964) A.B., Indiana University, 1954; M.A., 1955; F.R.G.S.

Richard J. VanSteenkiste (1970) B.J., Univ. of Texas, 1963; M.A., 1966; Ph.D., 1970.

Adjunct Assistant Professor

Harold G. Dusko (1971) B.S., Southern Illinois Univ., 1964; M.B.A., Univ. of Dayton, 1970.

Instructors

Jerome M. Clemens (1971) B. Sc., Ohio State Univ., 1962; M.A., Ohio State Univ., 1965.

Peter A. Doherty (1971) B. Ed., de la Salle College, Manchester Univ., England, 1963; M.S., Florida State Univ., 1967.

James R. Trail (1967) B.S., Western Illinois Univ., 1963; M.A., Ohio State Univ., 1966.

Eldon J. Wetter (1969) *Piqua* and *Celina.* B.S., Wisconsin State Univ., Platteville, 1967; M.A., Ohio State Univ., 1969.

DEPARTMENT OF HISTORY

Professors

Edward F. Cox (1965) A.B., Indiana Univ., 1949; A.M., Indiana Univ., 1950; Ph.D., Indiana Univ., 1957.

Eugene R. Craine (1967) B.A., Maryville College, 1940; M.A., Univ. of Tennessee, 1946; Ph.D., Univ. of Oklahoma, 1954.

Kenneth I. Dailey (1968) A.B., St. Lawrence Univ., 1938; Ph.D., Syracuse Univ., 1957.

Paul McStallworth (1969) A.B., Geneva College, 1936; M.A., Howard Univ., 1940; Ph.D., Ohio State Univ., 1954.

Andrew P. Spiegel (1970) B.A., Denison Univ., 1948; LL.B., Univ. of Michigan Law School, 1950; M.S., Univ. of Wisconsin, 1956; Ph.D., Univ. of Wisconsin, 1959.

Associate Professors

Charles R. Berry (1971) B.A., George Washington Univ., 1954; M.A., Univ. of Texas at Austin, 1963; Ph.D., Univ. of Texas at Austin, 1967.

Jacob H. Dorn (1965) B.A., Wheaton College, 1960; M.A., Univ. of Oregon, 1962; Ph.D., Univ. of Oregon, 1965.
Harold M. Hollingsworth (1970) A.S., Univ. of Texas at Arlington, 1951; B.S., North Texas State Univ., 1953; M.A., Univ. of Tennessee, 1956; Ph.D., Univ. of Tennessee, 1966.
Allan Spetter (1967) A.B., Rutgers Univ., 1960; M.A., Rutgers Univ., 1961; Ph.D., Rutgers Univ., 1966.
Victor D. Sutch, *Acting Chairman* (1970) B.A., Olivet Nazarene College, 1946; M.A., Western Reserve Univ., 1948; Ph.D., Univ. of Colorado, 1962.

Assistant Professors

Martin Arbagi (1969) A.B., Georgetown Univ., 1961; M.A., Rutgers Univ., 1967; Ph.D., Rutgers Univ., 1969.
Carl Becker (1964) B.A., Otterbein College, 1949; M.A., Univ. of Wisconsin, 1950; Ph.D., Univ. of Cincinnati, 1971.
C. DeWitt Hardy (1970) B.A., Northwestern Univ., 1932; M.A., Northwestern Univ., 1933; LL.D., McKendree College, 1956.
Paul G. Merriam (1966) A.B., San Diego State College, 1961; M.A., Univ. of Oregon, 1963.
F. Richard Swann (1966) B.A., Notre Dame Univ., 1952; M.A., Xavier Univ., 1962.
Harvey Wachtell (1966) B.A., Brooklyn College, 1961; M.A., Univ. of Missouri, 1963.

Instructors

Merritt Wood (1969) *Celina.* B.A., Univ. of Arkansas, 1966; M.A., Univ. of Arkansas, 1967.

DEPARTMENT OF MODERN LANGUAGES

Associate Professors

Georgiana Babb (1964) B.A., Ohio State Univ., 1943; M.A., Ohio State Univ., 1946; Ph.D., 1951.
James E. Larkins (1964) B.A., Miami Univ., 1955; M.A., Ohio State Univ., 1961; Ph.D., 1966.
John H. Park, *Chairman* (1970) B.A., Emory Univ., 1950; M.A., Univ. of the Americas, Mexico, 1953; Ph.D., Indiana Univ., 1960.

Assistant Professor

Hildegard Gensch (1969) B.A., Bob Jones Univ., 1956; M.A., 1958; M.A., Middlebury College, 1963; Ph.D., Cincinnati, 1967.
Peter A. Hudson (1970) B.A., Harvard Univ., 1961; M.A., Harvard Univ., 1966.
Karlis Racevskis (1972) B.A., City College of the City Univ. of New York, 1961; M.A., City College of the City Univ. of New York, 1966; Ph.D., Columbia Univ., 1971.

Instructors

Emilie T. Cannon (1970) A.B., Univ. of North Carolina at Greensboro, 1959; M.A., Tulane Univ., 1963.
Lamarr W. Reese (1970) B.A., Central State, 1959; M.A., North Carolina College, 1960.
William A. Schoelkopf (1970) B.A., Univ. of Scranton, 1965.
Charles M. Taylor (1970) B.A., Univ. of the Americas, Mexico, 1959; M.A., Trinity Univ., 1966.
Anni Whissen (1965) B.A., Miami Univ., 1957; M.A., Colorado, 1961.

Lecturers

Yvonne Chappelle (1970) B.A., Allegheny College, 1959; M.A., American Univ., 1960.

DEPARTMENT OF MUSIC

Associate Professors

William C. Fenton, *Chairman* (1965) B.Mus., Cincinnati Conservatory, 1950; B.S., 1951; M.Ed., Miami, 1956; Ed.D., Cincinnati, 1967.
Barbara R. Foster (1966) B.F.A., Georgia, 1958; M.F.A., 1960; M.Mus., Illinois, 1963; D.M.A., 1970.

Al F. Guinn (1969) B.S., Cincinnati, 1952; M.Ed., Miami, 1956.

Assistant Professors

Theodore N. Atsalis (1967) B.Mus., Miami, 1960; M.Mus., 1962.

Paul C. Magill (1964) B.S., Ohio State, 1956; M.Ed., Miami, 1962.

Patricia Olds (1964) B.Mus., College of Music, Cincinnati, 1950; M.Mus., 1951; M.A., Indiana, 1962.

David G. Poff (1969) B.S., Lebanon Valley College, 1961; M.M., Michigan, 1962; Ph.D., Univ. of Michigan, 1969.

William J. Steinohrt (1971) B.S.M.E., Univ. of Illinois, 1958; M.F.A., Univ. of Hawaii, 1968; D.M.A., North Texas State Univ., 1971.

Robert J. Young (1966) B.M.E., Northwestern, 1959; M.Mus., 1965.

Music Associates (part time)

Robert Cavally (1966) B.Mus., Cincinnati Conservatory; Graduate Study, Paris Conservatory.

Keith Clark (1968) B.Mus., Miami Univ., 1965; M.Mus., 1967. Music Director: Living Arts Center.

Arthur Eresman (1969) B.Mus., Baldwin-Wallace College, 1947; M.Mus., Eastman School of Music, 1951; Principal clarinetist: Dayton Philharmonic.

Harry Haggerty (1968) B.S., Univ. of Cincinnati, 1950. Coordinator of Music: West Carrollton Public Schools.

Wanda Harris (1970) B. Mus., Northwestern, 1950; pianist: Dayton Philharmonic.

Robert Hockenberger (1966) B.M., B.Sc., College-Conservatory of Music, Cincinnati, 1966; Principal trumpeter, Dayton Philharmonic.

Sarah Johnson (1970) B.Mus., Michigan State Univ., 1956; M.A., Kent State Univ., 1970.

Paul Ray Jones (1966) B.M.E., B.M., Otterbein, 1937; M.Mus., Michigan, 1940; Graduate study, Florence, Italy; Organist: First Lutheran Church.

Paul Katz (1965) B.Mus., Cleveland Inst. of Music, 1931; D.Mus., Dayton, 1961; D.Mus., Central State, 1961.

Dee Levitan (1970) B.Sc., Julliard School of Music, 1948; M.Sc., 1949.

Robert McMillan (1968) B.S., Wittenberg Univ., 1957; M.Ed., Wright State Univ., 1970; Supervisor of Music: Fairborn Public Schools.

Emma Louise Odum (1966) B.S., Dayton, 1942; M.Ed., Miami, 1961; Graduate study, International Summer Academy at the Mozarteum, Salzburg, Austria, 1964; Principal violist: Dayton Philharmonic and Springfield Symphony.

Dennis Ransbottom (1970) B.F.A., Ohio Univ., 1960; M.Mus., Miami Univ., 1970; Supervisor of Music: Celina Public Schools.

John Reger (1966) Principal trombonist: Dayton Philharmonic.

James Schreiber (1968) B.Mus., College of Wooster, 1960; M.Mus., Indiana Univ., 1961; M.Mus., Univ. of Cincinnati, 1965. French horn: Cincinnati Symphony Orchestra.

Suzanne Scutt (1967) B.Mus., Cincinnati Conservatory, 1951; M.Mus. Illinois, 1953.

Robert Thygerson (1966) B.M., Dayton, 1949; M.Ed., Miami, 1955; Supervisor of Music: Kettering Public Schools.

Jane Varella (1966) B.M., Eastman, 1958; Percussionist: Dayton Philharmonic.

Pansy Wildman (1968) B.S., Univ. of Cincinnati, 1948.

Janice Workman (1971) B.Sc., Ohio State Univ., 1963; M.A., Univ. of Northern Colorado, 1968.

Karen Young (1966) B.M., Montana, 1959.

DEPARTMENT OF PHILOSOPHY

Associate Professor

Robert J. Power (1965) B.A., North Dakota, 1959; M.A., Emory, 1960; Ph.D., 1965.

Assistant Professors

Ronald Frederick Hough *Acting Chairman* (1966) B.S., Dayton, 1961; M.A., Miami 1962; Ph.D., Ohio State, 1970.

Instructor

Donald J. Beelick (1967) B.A., Western Michigan, 1963.

DEPARTMENT OF POLITICAL SCIENCE

Professor

Reed M. Smith, *Chairman* (1969) A.B., Oberlin College, 1949; M.A., Penn. State Univ., 1954; M.A., Columbia Univ., 1953; Ph.D., Columbia Univ., 1961.

Associate Professors

Willard J. Hutzel (1966) B.A., Bowling Green, 1959; Ph.D., Maryland, 1966.

Robert G. Thobaben (1964) B.S., Ohio Univ., 1948; M.A., Miami Univ., 1962; Ph.D., Univ. of Cincinnati, 1967.

Assistant Professors

Robert W. Adams (1965) A.B., Utica College, 1955; M.A., Syracuse Univ., 1961; Ph.D., Ohio State Univ., 1969.

Kanti C. Kotecha (1970) Barrister at Law, Middle Temple, London, 1960; M.A., Tufts Univ., 1965; Ph.D., Tufts Univ., 1971.

Ronald Mark Sirkin (1970) B.A., Univ. of Maryland, 1965; M.A., Pennsylvania State Univ., 1967.

Byron Weng (1965) B.A., National Taiwan, 1957; M.S., Univ. of Wisconsin, 1961; Ph.D., Univ. of Wisconsin, 1971.

Instructors

James L. Walker (1969) B.A., Univ. of Santa Clara, 1963; M.A., Univ. of California, Berkeley, 1964.

DEPARTMENT OF RELIGION

Associate Professors

Nicholas Piediscalzi, *Chairman* (1965) B.A., Grinnell, 1952; B.D., Yale, 1956; Ph.D., Boston, 1965.

Willis M. Stoesz (1970) B.A., Minnesota, 1955; B.D., Union Theological Seminary (N.Y.), 1958; Ph.D., Columbia, 1964.

Assistant Professors

Eric Lewis Friedland *Sanders Scholar* (1968) B.A., Boston University, 1960; M.A., Brandeis, 1962; Ph.D., 1967.

Robert D. Reece (1969) B.A., Baylor, 1961; B.D., Southern Baptist Theological Seminary, 1964; M.A., Yale, 1966; M.Phil., 1968; Ph.D., 1969.

DEPARTMENT OF SOCIOLOGY, ANTHROPOLOGY, AND SOCIAL WORK

Professor

Lawrence J. Cross, *Chairman* (1970) B.A., Loyola Univ., 1943; M.A., 1951; Ph.D., Univ. of Pennsylvania, 1962.

Associate Professors

Leonard Cargan (1970) B.A., Wayne State Univ., 1958; M.A., Wayne State Univ., 1963; Ph.D., Wayne State Univ., 1968.

A. K. M. Aminul Islam (1969) B.A., Dacca, 1952; M.A., 1954; M.A., London, 1961; M.A., Toronto, 1964; Ph.D., McGill, 1969.

Myrtle Korenbaum (1970) A.B., Brown Univ., 1953; M.A., 1955; Ph.D., Univ. of Minnesota, 1966.

Assistant Professors

Jeanne H. Ballantine (1971) B.S., Ohio State Univ., 1963; M.A., Columbia Univ., 1966; Ph.D., Indiana Univ., 1971.

Eugene C. Hepola (1968) B.A., Michigan State Univ., 1952; M.A., Michigan State Univ., 1959.

Ilaine B. Lieberman (1966) B.A., Misericordia, 1948; M.S.W., Pennsylvania, 1958.

John P. Thatcher (1969) B.A., Middlebury, 1964; M.A., Pennsylvania, 1968; Ph.D., 1971.

Instructors

Ellen M. Murray (1967) B.A., Berea, 1952; M.A., Ohio State, 1967.

Adjunct Professor

Marie K. Oswald (1971) B.S., Ohio State Univ., 1923; M.S., Simmons College, 1924; M.S., Univ. of Michigan, 1942. Ph.D., 1951.

DEPARTMENT OF SPEECH AND THEATRE

Professor

Abe J. Bassett (1970) B.A., Bowling Green, 1952; M.A., Ohio State Univ., 1957; Ph.D., Ohio State Univ., 1962.

Associate Professors

Barbara B. Dreher (1966) B.A., Connecticut, 1955; M.A., Illinois, 1956; Ph.D., Ohio State Univ., 1966.

R. Gene Eakins (1969) B.A., Wittenberg, 1951; B.S., 1953; M.Ed., Kent State, 1959; Ph.D., Ohio State Univ., 1966.

Charlene F. Edwards, *Acting Chairman* (1965) B.A., Colorado, 1936; M.A., Denver, 1945; Ph.D., 1957.

Assistant Professors

Gustav O. Alexander (1971) B.A., Harvard, 1960; M.A., San Francisco State, 1969; Ph.D., Michigan State Univ., 1971.

Instructors

Beverly A. Gaw (1969) B.A., Miami, 1964; M.A., Miami, 1967

Frederic S. Meyers (1969) B.S., Troy State Univ., 1965; M.A. Univ. of Alabama, 1967

College of Science and Engineering

Dean: Robert T. Conley

Assistant Dean: Krishan K. Gorowara

Acting Associate Dean: Brian L. Hutchings

DEPARTMENT OF BIOLOGICAL SCIENCES

Professors

Prem P. Batra (1965) B.S., Punjab, 1955; M.S., 1958; Ph.D., Arizona, 1961.

Shigeru I. Honda (1966) B.S., California Inst. of Technology, 1950; M.S., Wisconsin, 1952; Ph.D., 1954.

Jerry H. Hubschman (1964) A.A.S., State Univ. of New York, 1956; B.S., Ohio State, 1959; Ph.D., 1962.

Brian L. Hutchings, *Chairman* (1968) B.S., Brigham Young, 1938; M.S., Wisconsin, 1940; Ph.D., 1942.

Emil Kmetec (1964) B.S., Chicago, 1948; M.S., 1953; Ph.D., Wisconsin, 1957.

Associate Professors

H. Ira Fritz (1966) B.S., California, 1958; Ph.D., 1964.

Charles R. McFarland (1968) B.S., Otterbein, 1949; M.S., Ohio State, 1950; Ph.D., West Virginia, 1967.

Noel S. Nussbaum (1965) B.A., Brooklyn, 1956; M.A., Williams, 1958; Ph.D., Yale, 1964.

John D. Rossmiller (1965) B.S., Wisconsin, 1956; M.S., 1962; Ph.D., 1965.

Marvin B. Seiger (1965) B.S., Duquesne, 1950; M.A., Texas, 1953; M.A., California (Los Angeles), 1959; Ph.D., Toronto, 1962.

Adjunct Associate Professor

Darrell E. Fleishman (1971) B.S., California Inst. of Technology, 1958; M.S., Arizona State Univ., 1962; Ph.D., Univ. of Arizona, 1965.

Assistant Professors

Arlene F. Foley (1964) A.B., Anderson, 1960; M.A., Indiana, 1963.

Robert J. Hay (1970) B.S., Univ. of Manitoba, 1960; M.S., 1961; Ph.D., Univ. of Glasgow, 1964.
George J. Kantor (1970) B.A., Slippery Rock State College, 1958; M.S., New Mexico Highlands Univ., 1962; Ph.D., Pennsylvania State Univ., 1967.
Andrew J. Kuntzman (1965) B.S., Ohio State, 1961; M.S., 1963; Ph.D., Ohio State, 1970.
Billy E. Norris (1970) *Celina.* B.S., Ball State, 1960; M.S., 1965; Ed.D., Ball State, 1970.
Timothy S. Wood (1971) A.B., Earlham College, 1964; Ph.D., Univ. of Colorado, 1971.

Adjunct Assistant Professor

J. William Spickler (1970) B.S.E.E., Northwestern Univ., 1962; M.A., Northwestern Univ., 1964; Ph.D., Northwestern Univ., 1968.

Instructors

Robert E. Burger (1966) B.S., Bowling Green, 1965; M.A., 1967.
Flora-Louise Matter (1969) *Celina.* B.S., Heidelberg, 1959; M.S., Ohio State Univ., 1962.

Teaching Associates

Robert M. Gleason (1968) B.A., Wright State Univ., 1968; M.S., Wright State Univ., 1971.

DEPARTMENT OF CHEMISTRY

Professors

Rubin Battino (1966) B.S., City College of New York, 1953, M.A., Duke Univ., 1954; Ph.D., Duke Univ., 1957.
Robert T. Conley (1967) B.S., Seton Hall Univ., 1953; M.A., Princeton Univ., 1955; Ph.D., Princeton Univ., 1957.
Gordon B. Skinner (1964) B.S., Univ. of Manitoba, 1947; M.S., Univ. of Manitoba, 1949; Ph.D., Ohio State Univ., 1951.

Adjunct Professor

Robert E. Sievers (1969) B.S., Univ. of Tulsa, 1956; M.S., Univ. of Illinois, 1958; Ph.D., Univ. of Illinois, 1960.

Associate Professors

John J. Fortman (1965) B.S., Univ. of Dayton, 1961; Ph.D., Univ. of Notre Dame, 1965.
George G. Hess (1965) B.S., Juniata College, 1959; Ph.D., Pennsylvania State Univ., 1964.
James J. Kane (1964) B.S., Upsala College, 1954; Ph.D., Ohio State Univ., 1960.
David J. Karl, *Chairman* (1966) B.S., Providence College, 1956; Ph.D., Michigan State Univ., 1960.
M. Paul Serve' (1965) B.A., Notre Dame Univ., 1961; M.A., 1964; Ph.D., 1965; Ph.D., Univ. of Chicago, 1965.

Adjunct Associate Professors

Curt Thies (1969) B.S., Western Michigan Univ., 1956; M.S., Inst. of Paper Chemistry, 1958; Ph.D., Michigan State Univ., 1962.
Stanley Weissman (1969) B.S., Roosevelt College, 1953; Ph.D., Illinois Inst. of Technology, 1959.

Assistant Professor

Sue C. Cummings (1969) B.A., Northwestern Univ., 1963; M.S., Ohio State Univ., 1965; Ph.D., Ohio State Univ., 1968.
Frank W. Harris (1970) B.S., Univ. of Missouri at Columbia, 1964; M.S., Iowa, 1968; Ph.D., 1968.
Paul G. Seybold (1970) B. Engr. Physics, Cornell, 1960; Ph.D., Harvard Univ., 1967.

Instructors

James B. Beard (1966) B.A., Miami Univ., 1957; M.A., Miami Univ., 1961.
Lois A. Cook (1964) B.A., College of Wooster, 1945; M.S., Ohio State Univ., 1948.
George T. Hildahl (1969) *Celina.* B.S., Wisconsin, 1950; M.S., 1956.

DEPARTMENT OF COMPUTER SCIENCES

Associate Professors

Robert D. Dixon, *Chairman* (1964) B.S., Ohio State Univ., 1958; M.S., 1960; Ph.D., 1962.

Joseph Kohler (1965) B.S., Ohio State, 1957; Ph.D., California Inst. of Technology, 1962.

Donald J. Schaefer (1964) A.B., San Jose State, 1957; M.A., Ohio State, 1958; Ph.D., 1963.

Assistant Professor

James E. Brandeberry (1969) B.S.E.E., Univ. of Toledo, 1961; M.S., Univ. of Toledo, 1963; Ph.D., Marquette Univ., 1969.

DEPARTMENT OF ENGINEERING

Professors

Brage Golding (1966) B.S.Ch.E., Purdue Univ., 1941; Ph.D., Purdue Univ., 1948.

Francis J. Jankowski, *Chairman* (1969) B.S.C.E., Union College, 1943; M.S., Univ. of Cincinnati, 1947; Sc.D., Univ. of Cincinnati, 1949.

Malcolm L. Ritchie (1969), A.B., Univ. of California, 1948; M.A., Univ. of California, 1951; Ph.D., Univ. of Illinois, 1953.

Robert F. Rolsten (1971) B.S., Capital Univ., 1948; Ph.D., Ohio State Univ., 1955.

Associate Professor

Ronald G. Schmidt (1970) A.B., Columbia College, 1953; M.A., Columbia Univ., 1955; Ph.D., Univ. of Cincinnati, 1957.

Assistant Professors

Richard J. Bethke (1970) B.S.M.E., Univ. of Wisconsin, 1965; Ph.D., Univ. of Wisconsin, 1970.

James E. Brandebery (1969) B.S.E.E., Univ. of Toledo, 1961; M.A., Univ. of Toledo, 1963; Ph.D., Marquette Univ., 1969.

Billy W. Friar (1970) A.B., Berea College, 1953; B.S., Virginia Polytechnic Inst., 1958; M.S., Ohio State, 1959; Ph.D., Ohio State, 1970.

Naresh N. Gupta (1970) B.S. Physics, Punjab Univ., 1959; B.E.E.E., Indian Inst. of Sci., 1963; M.S., Ottowa Univ., 1965; Ph.D., Polytechnic Inst. of Brooklyn, 1969.

George T. Hankins (1969) B.S.E.E., U.S. Air Force Inst. of Technology, 1955; M.S., Southern Methodist Univ., 1961.

William S. McCormick (1969) B.S.E.E., Marquette Univ., 1961; M.A., Univ. of Wisconsin, 1963; Ph.D., Univ. of Wisconsin, 1967.

Richard R. Scott (1969) B.S.M.E., Univ. of Mississippi, 1960; Ph.D., Univ. of Alabama, 1968.

George M. Swisher (1969) B.S.M.E., Univ. of Cincinnati, 1966; M.S., Ohio State Univ., 1967; Ph.D., Ohio State Univ., 1969.

DEPARTMENT OF GEOLOGY

Professors

James A. Noel (1966) B.A., Lehigh, 1949; M.A., Dartmouth, 1951; Ph.D., Indiana, 1956.

Karel Toman (1970) Dr.Tech., Technical Univ., Prague, 1951; C.Sc., 1957; Dr.Sc., Czechoslovak Academy of Sciences, 1965.

Associate Professors

Benjamin H. Richard (1966) B.S., Virginia Polytechnic, 1958; M.A., Indiana, 1961; Ph.D., Indiana, 1966.

Ronald G. Schmidt (1970) A.B., Columbia Univ., 1953; M.A., Columbia Univ., 1955; Ph.D., Univ. of Cincinnati, 1957.

Assistant Professors

Lael E. Bradshaw (1964) B.S., Dayton, 1955; M.A., Texas, 1957; Ph.D., Texas, 1966.

Kenneth F. Kramer, *Acting Chairman,* (1967) B.A., Rice, 1961; Ph.D., Florida State, 1967.

Philip G. Malone (1970) B.S., Univ. of Louisville, 1962; A.M., Indiana, 1964; Ph.D., Case Western Reserve, 1968.
Paul Pushkar (1968) B.S., Manitoba, 1959; Ph.D., California, 1966.

Instructors

Robert J. Larson (1968) B.S., Superior State Univ., 1965; M.S., Michigan Technological, 1968.
Jo-Ann Sherwin (1969) A.B., Brown, 1960; M.Sc., Brown, 1966.
Kenton Strickland (1969) *Piqua* and *Celina*. B.S., Bowling Green, 1967.

DEPARTMENT OF MATHEMATICS

Professors

Krishan K. Gorowara (1966) B.A., Lucknow, 1951; M.A., 1952; Ph.D., Delhi, 1958.
David Sachs (1966) B.S., Illinois Inst. of Technology, 1955; M.S., 1957; Ph.D., 1960.

Associate Professors

William E. Coppage (1964) B.A., Texas Agricultural and Mechanical, 1955; M.S., 1956; Ph.D., Ohio State, 1963.
Robert D. Dixon *Chairman* (1964) B.S., Ohio State, 1958; M.S., 1960; Ph.D., 1962.
Robert M. Haber (1965) B.S., Ohio State, 1953; M.A., 1955; Ph.D., 1958.
Joseph Kohler (1965) B.S., Ohio State Univ., 1957; Ph.D., California Inst. of Technology, 1962.
Raymond E. Lewkowicz (1966) B.S., Michigan, 1952; M.A., 1956; Ph.D., 1963.
Leone Y. Low (1964) B.S., Oklahoma State, 1956; M.S., 1958; Ph.D., 1961.
Marc E. Low (1964) B.S., Oklahoma State, 1958; M.A., 1960; Ph.D., Illinois, 1965.
Carl C. Maneri (1965) B.S., Case Inst. of Technology, 1954; Ph.D., Ohio State, 1959.
Gerald Meike (1965) B.S., Aquinas, 1952; M.A., Detroit, 1954; Ph.D., Univ. of Michigan, 1969.
Donald J. Schaefer (1964) A.B., San Jose State, 1957; M.A., Ohio State, 1958; Ph.D., 1963.
Robert Silverman (1965) B.A., Ohio State, 1951; M.A., Ohio State, 1954; Ph.D., 1958.

Assistant Professors

Harold Allen (1970) B.S., Univ. of Detroit, 1964; M.S., Univ of Detroit, 1966; Ph.D., Michigan State Univ., 1970.
Charles L. Belna (1969) B.S., Dayton, 1965; M.A., Michigan State, 1967; Ph.D., 1969.
Anthony P. Blozinski (1970) B.S., Seattle Univ., 1966; M.S., Purdue Univ., 1968; Ph.D., Purdue Univ., 1970.
Aiden A. Bruen (1971) B.Sc., Univ. of Dublin, 1962; M.Sc., Univ. of Dublin, 1963; Ph.D., Univ. of Toronto, 1971.
Won Joon Park (1969) B.S., Seoul National Univ., 1957; M.A., California, 1965; Ph.D., Minnesota, 1969.
Alphonso L. Smith (1964) B.S., Ohio State, 1959; M.S., 1964.

Instructors

Michael V. Jenkins (1969) *Celina*. B.S., Rio Grande, 1967; M.Ed., Morehead, 1968.
Ronald E. Rife (1969) *Celina*. B.S., Manchester, 1967; M.S., Michigan State, 1969.

DEPARTMENT OF PHYSICS

Professors

Harvey M. Hanson, *Chairman* (1965) B.S., Univ. of Akron, 1952; M.Sc., Ohio State Univ., 1954; Ph.D., Ohio State Univ., 1956.

John S. Martin (1969) B.Sc., Natal, 1951; M.Sc., Natal, 1952; D.Phil., Oxford, England, 1957.

Associate Professors

Joseph W. Hemsky (1966) B.S., Missouri School of Mines and Metallurgy, 1958; Ph.D., Purdue, 1966.

Paul J. Wolfe (1966) B.S., Case Inst. of Technology, 1960; M.S., Case Inst. of Technology, 1963; Ph.D., Case Inst. of Technology, 1966.

Assistant Professors

Merrill L. Andrews (1970) B.A., Cornell, 1960; Ph.D., Massachusetts Inst. of Technology, 1967.

Samuel C. Ling (1969) B.S., National Taiwan Univ., 1951; M.S., Baylor Univ., 1953; Ph.D., Ohio State Univ., 1969.

Thomas W. Listerman (1967) B.S., Xavier, 1959; M.S., Ohio Univ., 1962; Ph.D., Ohio Univ., 1965.

Charles B. Ross (1970) B.S., Villanova, 1957; M.S., Purdue, 1969; Ph.D., 1969.

H. Mitchel Simpson (1971) A.B., Pfeiffer College, 1964; Ph.D., Clemson Univ., 1968.

David R. Wood (1967) A.B., Friends, 1956; M.S., Michigan, 1958; Ph.D., Purdue, 1967.

DEPARTMENT OF PSYCHOLOGY

Professors

George H. Crampton (1971) B.S., Washington State, 1949; M.S., 1950; Ph.D., Rochester, 1954.

Edward H. Kemp, *Chairman* (1968) B.A., Wake Forest, 1928; Ph.D., Clark, 1934.

Sherwin J. Klein (1965) A.B., Western Reserve, 1940; M.A., Pennsylvania, 1947; Ph.D., 1951.

Arthur C. MacKinney (1971) B.A., William Jewell College, 1951; M.A., Minnesota, 1953; Ph.D., 1955.

Associate Professor

Rand B. Evans (1967) B.A., Texas, 1963; M.A., 1964; Ph.D., 1967.

Assistant Professors

Harold D. Alleman (1970) B.S. Brigham Young Univ., 1966; M.S., 1967; Ph.D., 1970, Univ. of Iowa

Raymond R. Baird (1969) A.B., Eastern New Mexico, 1965; M.S., Washington, 1967; Ph.D., 1969.

Brian M. Kruger (1969) B.A., Wartburg, 1965; M.A., Iowa, 1967; Ph.D., 1969.

Martin T. Moss (1970) B.A., New York Univ., 1964; M.A., Hofstra Univ., 1967; Ph.D., Kansas State Univ., 1969.

Instructor

Richard A. Page (1970) A.B., Hamilton College, 1965.

Lecturers

Julien M. Christensen (1965) B.S., Illinois, 1940; M.A., Ohio State, 1952; Ph.D., 1959.

Gerald F. Rabideau (1969) B.A., Wisconsin, 1947; M.A., 1949; Ph.D., Purdue, 1953.

Richard E. Wienke (1969) B.A., Illinois, 1946; M.A., 1951; Ph.D., 1954.

Division of Continuing Education

Dean: Warren H. Abraham

Assistant Deans: James E. Larkins
Robert D. Earl

Assistant to the Dean: Verna Graves

Director, Business Administration Programs: Walter A. Beckdahl

Director, Piqua Academic Center: Joseph A. Gatton

Director, Western Ohio Branch Campus: Roger J. Stauffer

Administrative Assistant to Director, Western Ohio Branch Campus: Mary Alice McDermitt
Librarian, Western Ohio Branch Campus: Lela M. Holmes

Division of Graduate Studies

Dean: Arthur C. MacKinney
Assistant Dean: Thomas H. Wetmore
Assistant to the Dean: Mary Ellen Burns

University Division

Dean: Craig D. Willis
Director, Special Services: Anne B. Shearer
Director of Advisers: Marcia S. Emanuel

University Library

Director: James T. Dodson
Associate Director, Technical Services: L. Ronald Frommeyer
Acting Assistant Director, Instructional Services: Peter J. Bukalski

Associate Professors

James T. Dodson, *Director* (1964) A.B., Denison, 1954; M.A., Ohio State, 1960; M.S.L.S., Western Reserve, 1962.

L. Ronald Frommeyer, *Associate Director, Technical Services* (1971) B.A., Athenaeum of Ohio, 1957; M.S.L.S., Western Reserve Univ., 1965.

Assistant Professors

Anna Sue Brown, *Head Cataloger* (1967) B.S., Central Missouri State, 1951; M.S. in Library Science, Kansas State Teachers College, 1954.

Howard R. Jarrell, *Senior Information Consultant* (1969) B.S., Univ. of Dayton, 1955; M.S.L.S., Western Reserve, 1958.

Instructors

Ralph L. Carder, *Manager of Media Services* (1970) A.B., Morehead State Univ., 1962; M.A., Morehead State Univ., 1965.

Gay D. Henderson, *Information Consultant* (1971) B.A., Univ. of Denver, 1965; M.A.L.S., Univ. of Wisconsin, 1970.

Lela M. Holmes, *Librarian, Celina.* (1969) B.A., St. Francis, 1966; M.A., Indiana, 1967.

Naomi R. Jacobs, *Bibliography Librarian* (1972) B.A., Michigan State Univ., 1967; M.L.S., Univ. of Michigan, 1969.

Linda L. Krantz, *Information Consultant* (1969) A.B., Univ. of Rochester, 1965; M.L.S., Rutgers State Univ., 1967.

William F. Lehman, *University Television Coordinator* (1969) A.B., Indiana Univ., 1952; M.S., Purdue Univ., 1967.

Margaret A. Roach, *Information Consultant* (1969) B.A., Notre Dame College, 1959; M.S., Duquesne Univ., 1962; M.L.S., Univ. of Pittsburgh, 1965.

John P. Webb, *Information Consultant* (1970) B.A., Univ. of Dayton, 1968; M.L.S., Univ. of Oregon, 1970.

Francis C. Yu, *Information Consultant* (1971) B.A., National Chengchi Univ., Taiwan, 1964; M.S., Southern Illinois Univ., 1969.

DEPARTMENT OF LIBRARY AND COMMUNICATION SCIENCE

Adjunct Professors

Bob L. Mowery (1972) A.B., Catawba College, 1941; B.L.S., M.A., Univ. of Chicago, 1951.

Adjunct Associate Professors

Robert E. Kingery (1972) B.E., Wittenberg Univ., 1937; B.S., Columbia Univ., 1939.

George J. Mitchell (1972) A.B., Allegheny College, 1952; M.A., Syracuse Univ., 1953; M.S., Syracuse Univ., 1955.

Assistant Professors

Peter J. Bukalski, *Acting Chairman* (1970) B.A., Univ. of Wisconsin, 1963; M.A., Univ. of Wisconsin, 1964; M.F.A., Univ. of California, 1966.

Richard R. Ward (1968) B.S., Indiana State Univ., 1961; M.S., Indiana State Univ., 1964.

Gladys C. Wessels (1968) B.S., Univ. of Cincinnati, 1944; M.S.L.S., Florida State Univ., 1963.

Adjunct Assistant Professors

Nancy C. Brumit (1970) B.A., Univ. of Kentucky, 1955; M.L.S., Indiana Univ., 1968.

Charlotte C. Leonard (1972) A.B., Heidelberg College, 1943; M.S.L.S., Case-Western Reserve Univ., 1950.

John J. Philip (1971) B.A., Maryknoll College, 1953; M.L.S., Columbia Univ., 1955.

Instructors

Ralph L. Carder (1970) A.B., Morehead State Univ., 1962; M.A., Morehead State Univ., 1965.

William F. Lehman (1969) A.B., Indiana Univ., 1952; M.S., Purdue Univ., 1967.

John P. Webb (1970) B.A., Univ. of Dayton, 1968; M.L.S., Univ. of Oregon, 1970.

Francis C. Yu (1971) B.A., National Chengchi Univ., Taiwan, 1964; M.S., Southern Illinois Univ., 1969.

Adjunct Instructors

Len F. Berman (1972) B.A., Syracuse Univ., 1968; M.S., Syracuse Univ., 1970.

John A. Hampshire (1971) B.S.L.S., State Univ. College at Genesco, 1965; M.S., Syracuse Univ., 1968.

Faculty Associate

Frank J. Adinolfi, Jr., (1971) B.A., Univ. of Connecticut, 1965.

University Professor

Robert P. Milheim (1964) B.S., Pennsylvania State Teacher's College, 1939; M.A., Northwestern Univ., 1948; Ed.D., Northwestern Univ., 1955.

Administrative Officers

Lawrence J. Abrams (1970) **Staff Assistant, Development**
B.S. Fort Valley State, 1952; M.Ed., Tuskegee Inst., 1966.

David W. Allaman (1967) **Director of Management Services**
B.A., Otterbein, 1930.

Walker M. Allen, Jr. (1965) **Registrar**
A.B., Miami, 1962; M.S., Wright State, 1968.

Robert W. Anderson (1971) **Director of Plant Management**
B.S., Utah State College, 1951; M.S., Texas Tech. Univ., 1962

David S. Atwater (1967) **Director of Institutional Research**
A.B., Denison, 1955; M.A., Western Reserve, 1960.

Howard E. Bales (1964) **Director of Technical and Business Services; Associate Director of Research Development**
B.S., Wilmington, 1934.

R. Donald Bell (1964) **Director of Purchasing**
B.B.A., Cincinnati, 1955; M.B.A., Wright State, 1970

Malcolm Block, **Director of Health Services**
A.B., Miami Univ., 1935; M.D., Univ. of Michigan Medical School, 1939.

Yvonne J. Chappelle (1970) **Director of Black Cultural Resources Center**
B.A., Allegheny, 1959; M.A., American, 1960.

Joel R. Cohan (1971) **Director of Financial Aid**
B.S., Monmouth College, 1962; M.S., State Univ. of New York, 1966.

Elizabeth Dixon (1968) **Director of University Center**
B.S., Illinois Inst. of Technology, 1938.

Brage Golding (1966) **President**
B.S.Ch.E., Purdue, 1941; Ph.D., 1948.

Richard W. Grewe (1970) **Director of Safety**
B.A., Dayton, 1970.

Charles J. Hartmann (1970) **Executive Assistant to the President**
A.B., Washington Univ., 1959; J.D., Missouri, 1966.

Allen E. Haveman (1969) **Business Manager**
B.B.A., Baylor, 1937; M.A., George Washington, 1964.

Russell E. Hay (1968) **Director of Research Development**
A.B., Miami, 1940; M.S., Nebraska, 1942; Ph.D., Illinois, 1948.

Alan J. Herbert (1969) **Director of Communications**
B.S., Illinois, 1953.

Robert J. Kegerreis (1969) **Vice-President and Director of Administration**
B.A., Ohio State Univ., 1943; B.S., Ohio State Univ., 1943; M.B.A., Ohio State Univ., 1947; Ph.D., Ohio State Univ., 1968.

Thomas W. Keller (1969) **Director of the Budget**
B.B.A., Cincinnati, 1965.

William C. Kellerman (1968) **Director of Student Placement**
B.A., Illinois Wesleyan, 1941.

Bruce W. Lyon (1967) **Dean of Students**
B.S., Northwestern, 1962; M.A., 1964; Ph.D., Ohio State, 1969.

Robert D. Marlow (1967) **Director of Campus Planning and Construction**
P.E., B.S.C.E., Texas A & M, 1963.

Clifford T. McPeak (1966) **Director of Intramurals**
B.S., Miami Univ., 1964; M.Ed., Miami Univ., 1965.

Kent L. Meyer (1971) **Director of Administrative Computer Services Center**
B.S., Miami Univ., 1966.

Donald J. Mohr (1966) **Athletic Director**
B.S., Cincinnati, 1950; M.A., Xavier, 1963.

Earl E. Parkhill (1969) **Director of University Publications**
B.S., Southern Illinois Univ., 1950; M.S., Southern Illinois Univ., 1971.

O. Edward Pollock (1970) **Vice-President and Director of Student Services**
B.A., Virginia, 1951; M.A., Ohio State, 1952.

Theodore B. Purvis, Jr. (1970) **Director of Personnel Administration**
B.S., Florida, 1941; M.B.A., Stanford, 1950.

Arlo D. Ragan, Jr. (1969) **Controller**
B.S., Bowling Green, 1954; M.B.A., Xavier, 1962; C.P.A., 1962.

Donald J. Schaefer (1964) **Director of Research and Instruction Computation Center**
A.B., San Jose State, 1957; M.A., Ohio State Univ., 1958; Ph.D., 1963.

Andrew P. Spiegel (1970) **Vice-President and Provost**
B.A., Denison, 1948; LL.B., Univ. of Michigan Law School, 1950; M.S., Wisconsin, 1956; Ph.D., Wisconsin, 1959.

Wayne M. Spray (1969) **Bookstore Manager**
B.A., Allegheny, 1939; M.Litt., Pittsburgh, 1940; M.S., Tennessee, 1965.

Frederick A. White (1962) **Vice-President and Treasurer; Director of University Development**
A.B., Otterbein, 1928.

Craig D. Willis (1970) **Director of Admissions**
B.A., Ohio Wesleyan, 1957; M.A., Ohio State, 1960; Ph.D., 1969.

Earl T. Zwetschke (1967) **Director of Counseling Services**
B.S. in Ed., Washington Univ., 1946; M.P.S., Univ. of Colorado, 1947; Ph.D., Univ. of Minnesota, 1953.

Name Index

General Index

The Wright State University Foundation, Inc.

The Wright State University Foundation is a nonprofit organization incorporated to receive and to hold gifts, grants, bequests, money, property, and other things of value for the benefit of the university, its faculty, and its students; and to give to the university such resources for educational and research purposes. For further information concerning the foundation, contact the Treasurer, Wright State University, Dayton, Ohio 45431.

second class postage paid at Dayton Ohio 45401